SUPERO

SUPERSERVER 5014C-MT

USER'S MANUAL

Revision 1.0b

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5014CM-T. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 5014C-MT is a high-end single processor rackmount server based on the SC813MT-300C 1U rackmount server chassis and the Super P8SCT motherboard. The P8SCT supports a single 800 MHz Intel® Pentium® 4 processor in an LGA775 socket.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super P8SCT motherboard and the SC813MT-300C chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5014C-MT into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5014C-MT.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the P8SCT motherboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC813MS-300C 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: Software Installation

Appendix D: System Specifications

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Chapter 1

Introduction

1-1 Overview

The Supermicro SuperServer 5014C-MT is a high-end single processor, 1U rackmount server featuring state-of-the-art technology. The 5014C-MT is comprised of two main subsystems: the SC813MT-300C 1U rackmount chassis and the P8SCT motherboard. Please refer to our web site for information on operating systems that have been certified for use with the 5014C-MT (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components may have been included with the 5014C-MT, as listed below.

- One CPU heatsink (SNK-P0011)
- One (1) slim CD-ROM drive [CDM-TEAC-24(B)]
- SATA Accessories:
  Four (4) SATA hard drive carriers (CSE-PT-39(B))
  One (1) internal SATA backplane (CSE-SATA-813L)
  Four (4) SATA cables (CBL-0074)
- One (1) 3.3V 64-bit, 66 MHz PCI-X slot riser card (CSE-RR1U-X)
- One (1) front side USB/COM port tray [(CSE-PT-40(B)]
- Three (3) 4-cm high-performance fans (FAN-0061)
- One (1) air shroud for 1U chassis (CSE-PT61)
- Rackmount hardware with screws (CSE-PT52):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails in a rack/telco rack
- One (1) CD containing drivers and utilities
- SuperServer 5014C-MT User's Manual

Note: "B" indicates part is also available in black.

1-2 Motherboard Features

At the heart of the SuperServer 5014C-MT lies the P8SCT, a single processor motherboard based on Intel's E7221 chipset and designed to provide maximum performance. Below are the main features of the P8SCT.

Processors

The P8SCT supports a single Intel® Pentium® 4 processor or a single Intel Celeron 533 MHz FSB processor in an LGA775 socket. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The P8SCT has four (4) 240-pin DIMM sockets that can support up to 4 GB of unbuffered ECC *or* non-ECC DDR2-533/400 SDRAM modules. The memory bus is a dual-channel configuration and memory modules must be installed in pairs (two at a time). All memory modules used to populate the system should be the same size, type and speed.

Serial ATA

The ICH6R South Bridge of the chipset includes a Serial ATA controller that supports a four-port SATA subsystem (RAID 0, 1 and 10 supported). The Serial ATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the Serial ATA drives.

PCI Expansion Slots

The P8SCT has one 64-bit, 133 MHz (3.3V) PCI-X slot and five 32-bit, 33 MHz (5V) PCI slots. When configured as the 5014CM-T, the 64-bit, 133 MHz PCI-X slot is available with the use of a riser card (included with the system).

Ethernet Ports

The P8SCT has two onboard Broadcom BCM5721 controllers to support two Gigabit LAN ports. (Supports 100/1000BASE-T, RJ45 output.)

Onboard Controllers/Ports

An onboard IDE controller supports up to four Ultra ATA 100 hard drives or ATAPI devices. Onboard I/O backpanel ports include one COM port, one parallel (printer) port, a VGA port, two USB ports, PS/2 mouse and keyboard ports and two GLAN (NIC) ports.

Other Features

Other onboard features that promote system health include voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

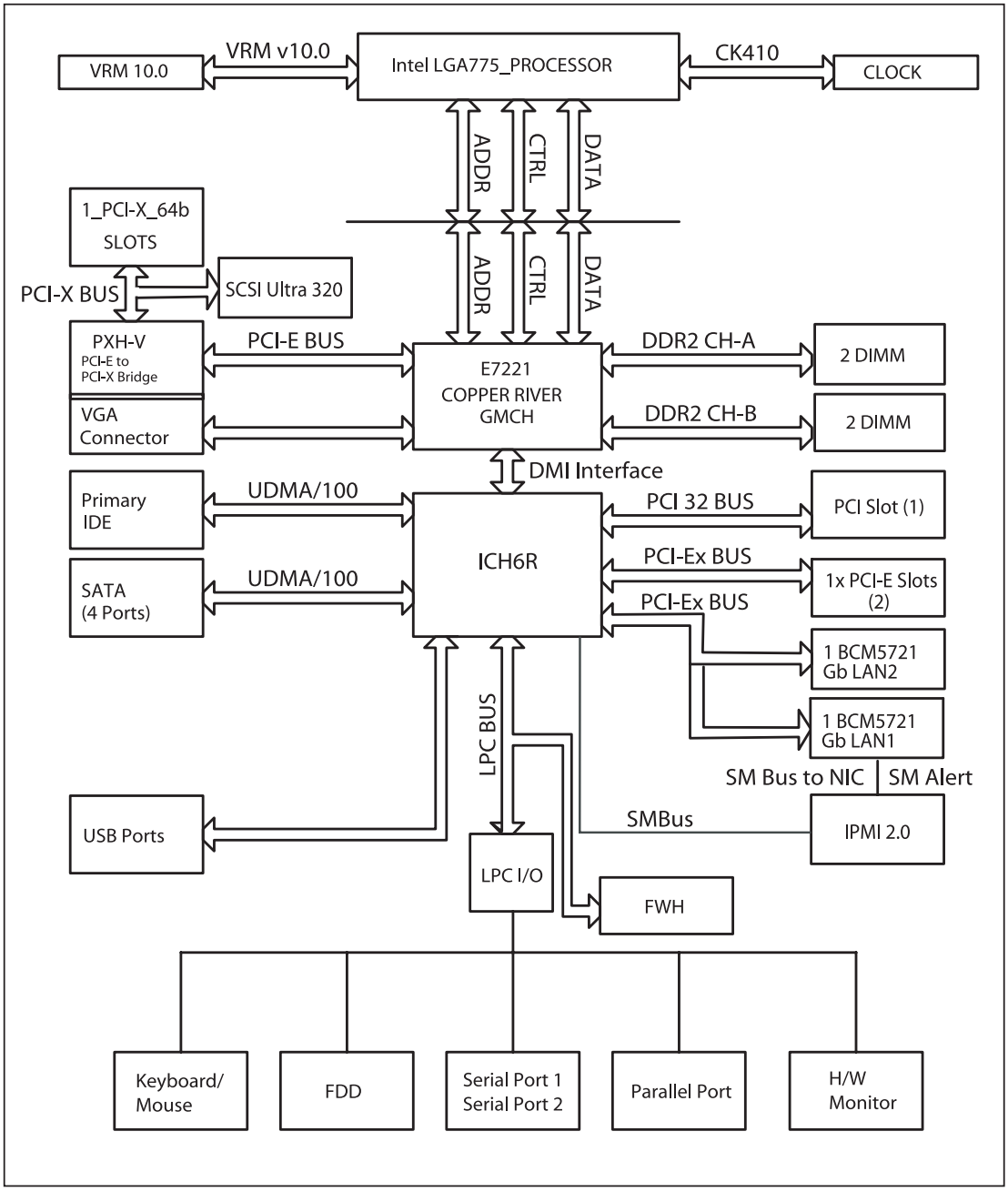


Figure 1-1. Intel E7221 Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC813MT-300C chassis.

System Power

When configured as a SuperServer 5014C-MT, the SC813MT-300C chassis includes a single 300W power supply.

Serial ATA Subsystem

For the 5014C-MT, the SC813MT-300 chassis was designed to support four Serial ATA hard drives, which are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the Serial ATA drives.

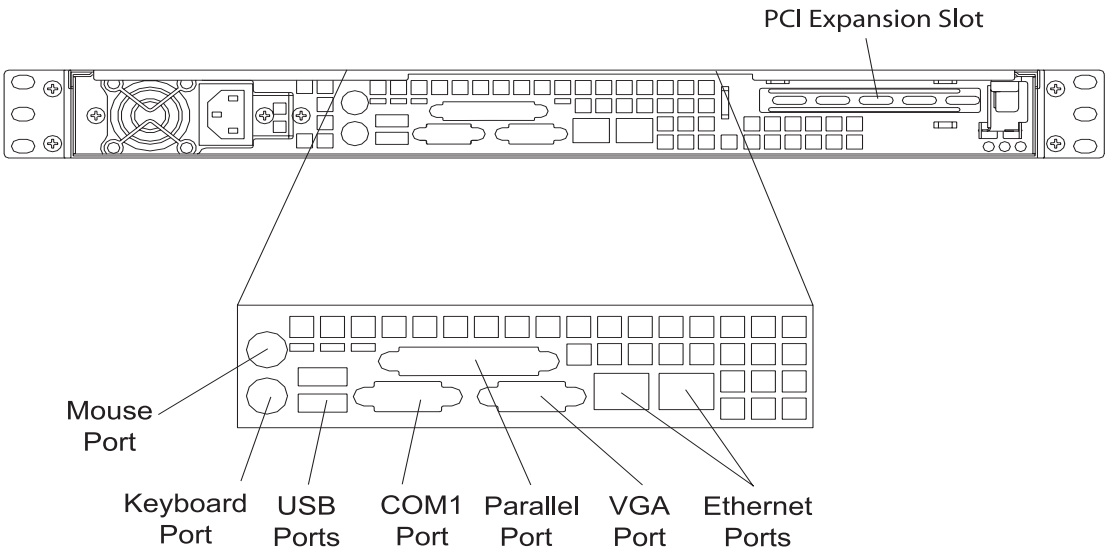
Control Panel

The SC813MT-300C's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions. The control panel also includes a main power button and a system reset button. The front of the SC813MT-300C also includes a COM port and two USB serial ports for easy access.

Rear I/O Panel

The SC813MT-300C is a 1U rackmount chassis. Its I/O panel provides one PCI motherboard expansion slot, one COM port (another is internal), two USB ports, a parallel (printer) port, PS/2 mouse and keyboard ports, a VGA port and two Gb Ethernet ports. (See Figure 1-2.)

Figure 1-2. Rear I/O Panel



Cooling System

The SC813MT-300C chassis has an innovative cooling design that features three 4-cm high-performance system cooling fans. Each of these fans plug into a chassis fan header on the motherboard. An air shroud channels the airflow generated by the fans to efficiently cool the processor area of the system.

A fan speed control setting in BIOS allows fan speed to be determined by system temperature [the recommended setting is 3-pin (Server)].

1-4 Contacting Supermicro

Headquarters

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980 Rock Ave.
San Jose, CA 95131 U.S.A.
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Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5014C-MT up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. This quick setup assumes that your 5014C-MT system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 5014C-MT was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 5014C-MT . It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 5014C-MT was shipped in should include two sets of rail assemblies, six rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimal amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
-This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In a single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot plug SATA drives to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

This section provides information on installing the SuperServer 5014C-MT into a rack unit with the rack rails provided. If the server has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

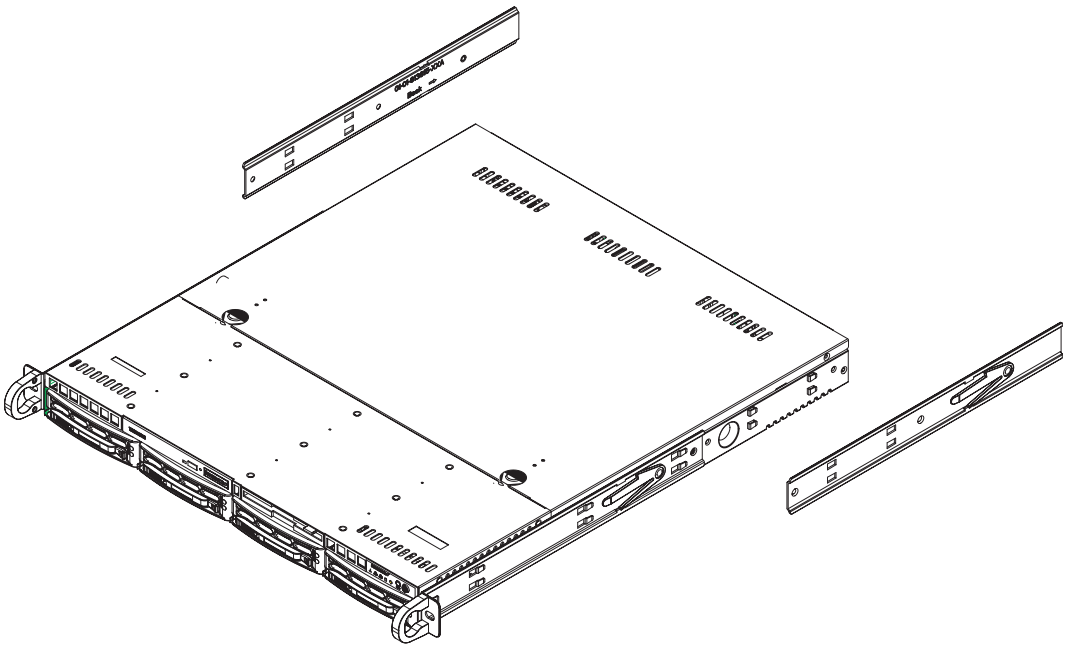
You may have received rack rail hardware with the SuperServer 5014C-MT. (Two front inner rails should already be attached to the chassis.) This hardware consists of two rear inner rails that secure to the chassis, one on each side just behind the preinstalled front inner rails. Note that these two rails are left/right specific.

Installing the Rear Inner Rails

First, locate the right rear inner rail (the rail that will be used on the right side of the chassis when you face the front of the chassis). Align the two square holes on the rail against the hooks on the right side of the chassis. Securely attach the rail to the chassis with M4 flat head screws. Repeat these steps to install the left rear inner rail to the left side of the chassis (see Figure 2-1). You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-1. Installing Rear Inner Chassis Rails



Installing the Rack Rails

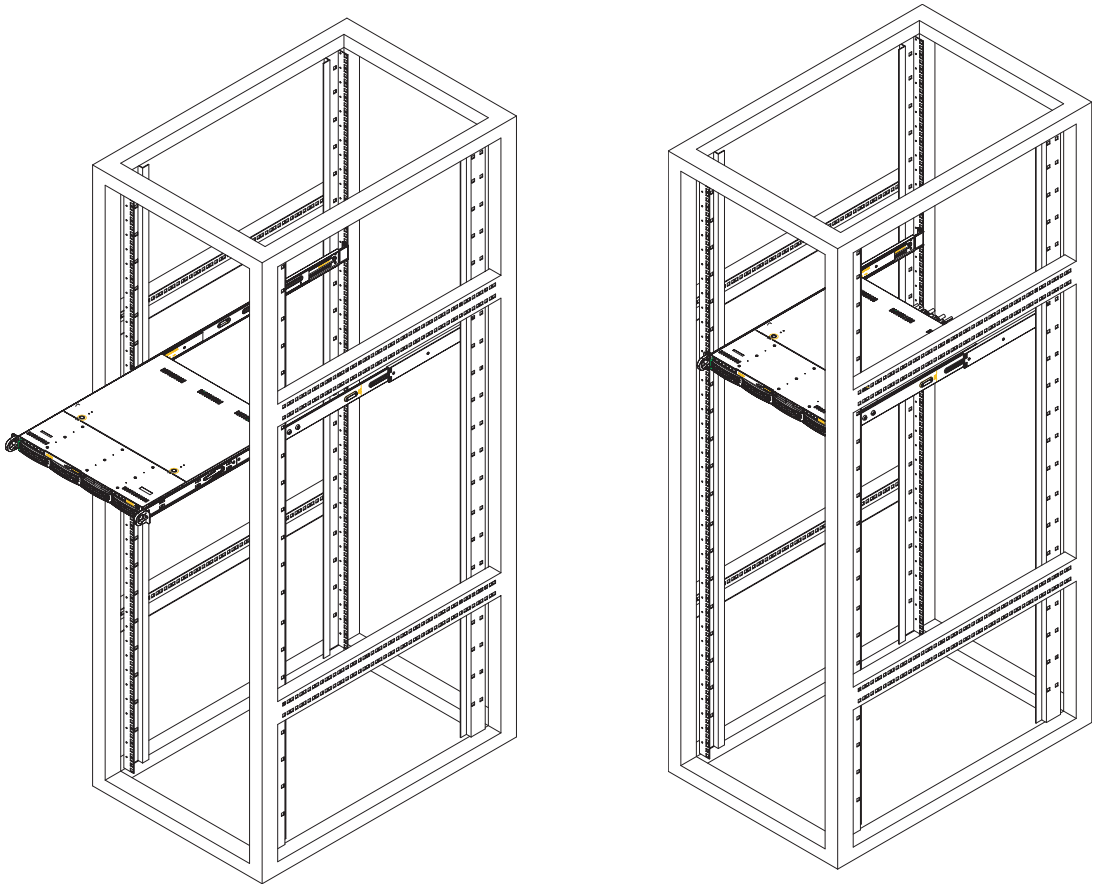
Determine where you want to place the SuperServer 5014C-MT in the rack (see Rack and Server Precautions in Section 2-3). Position the chassis rail guides at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-2.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

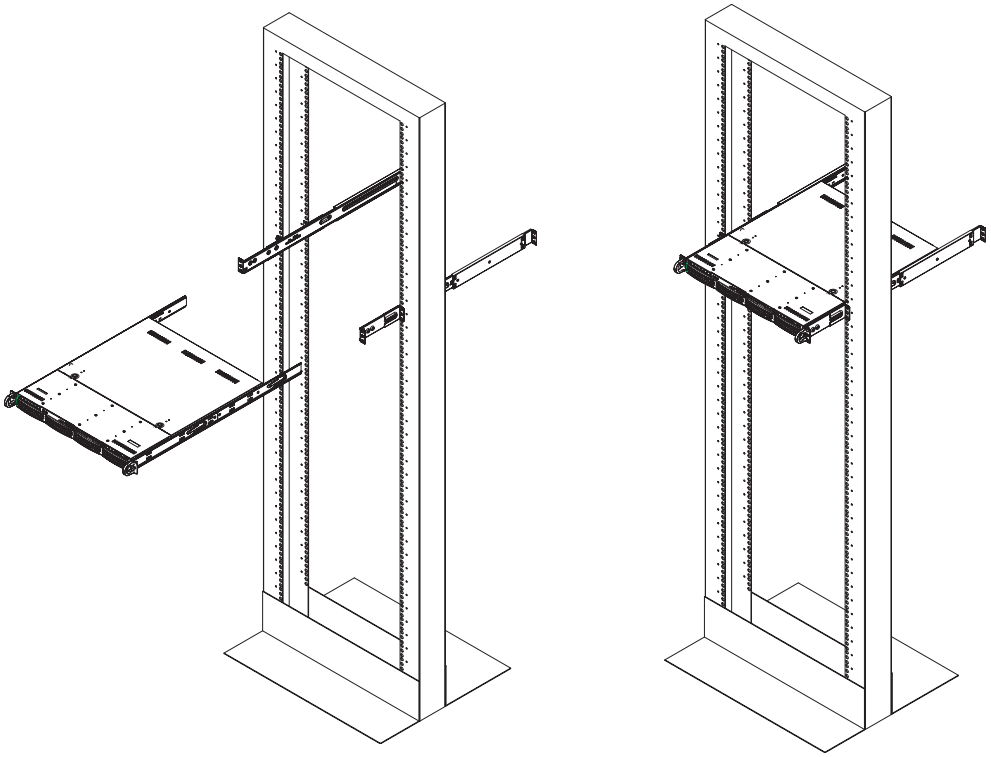
Figure 2-2. Installing the Server into a Rack (with optional front bezel shown)



Installing the Server into a Telco Rack

If you are installing the SuperServer 5014C-MT into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accommodate the width of the telco rack.

Figure 2-3. Installing the Server into a Telco Rack (with optional front bezel shown)



2-5 Checking the Motherboard Setup

After you install the 5014C-MT in the rack, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. **Accessing the inside of the system (Figure 2-4)**
   First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. There is a large rectangular recess in the middle front of the top cover to help you push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

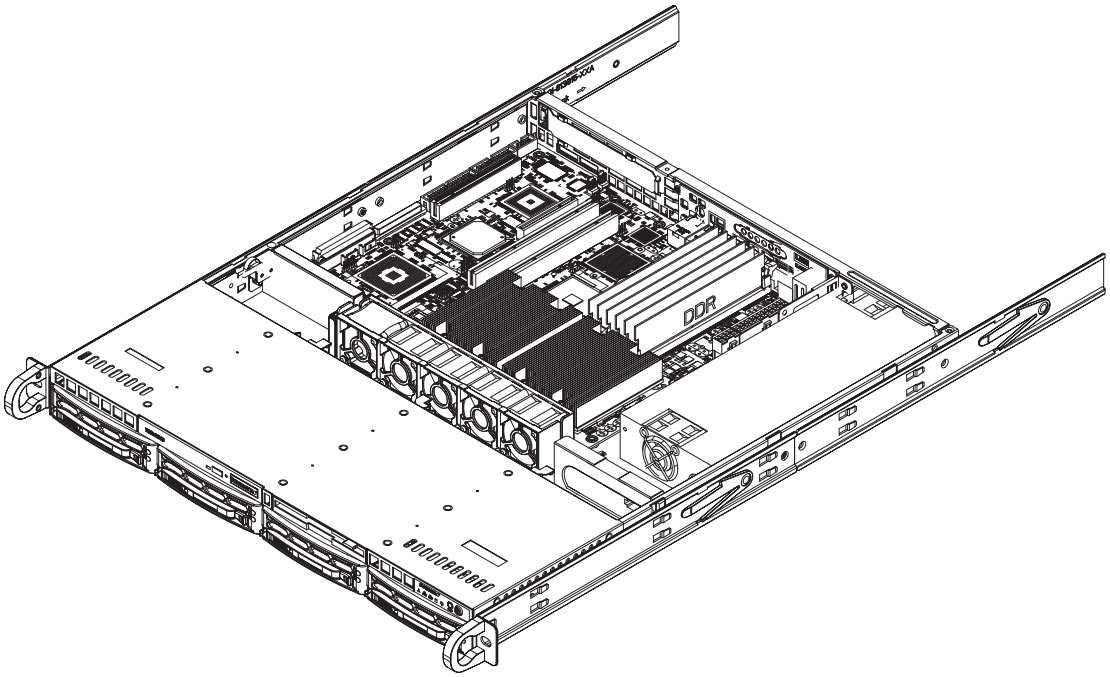
2. **Check the CPU (processor)**
   You may have the processor already installed into the system board. The processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. **Check the system memory**
   Your 5014C-MT server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

4. **Installing add-on cards**
   If desired, you can install an add-on card to the system. See Chapter 5 for details on installing a PCI add-on card.

5. **Check all cable connections and airflow**
   Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections. Also, check the air seals for damage. The air seals are located under the chassis fans and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis.

Figure 2-4.
Accessing the Inside of the SuperServer 5014C-MT



2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA drives and SATA backplane have been properly installed and all essential connections have been made.

1. **Accessing the drive bays**
   All drives can be accessed from the front of the server. For servicing the CD-ROM drive, you will need to remove the top chassis cover. The SATA disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. **Installing a CD-ROM drive**
   Refer to Chapter 6 if you need to reinstall a CD-ROM drive to the system.

3. **Check the Serial ATA disk drives**
   Depending upon your system's configuration, your system may have one or more SATA drives already installed. If you need to install SATA drives, please refer to the appropriate section in Chapter 6.

4. **Check the airflow**
   Airflow is provided by three high-performance 4-cm input fans. The system component layout was carefully designed to promote sufficient airflow through the small 1U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

5. **Supplying power to the system**
   The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS). Finish by pressing the power button on the front of the chassis.

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the SATA drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

There are two push-button buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

- **RESET:** The reset switch reboots the system.

- **POWER:** This is the main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC813MT-300C chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Overheat/Fan Fail:** When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

- **NIC2:** Indicates network activity on GLAN2 when flashing .

- **NIC1:** Indicates network activity on GLAN1 when flashing.

- **HDD:** Channel activity for all HDDs. This light indicates CD-ROM and SATA drive activity on the 5014C-MT when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 Serial ATA Drive Carrier LED

Each Serial ATA drive carrier has a green LED. When illuminated, this green LED (on the front of the Serial ATA drive carrier) indicates drive activity. A connection to the Serial ATA backplane enables this LED to blink on and off when that particular drive is being accessed.

Note: The second LED on the SATA carriers is not used.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 5014C-MT from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules and CD-ROM drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 5014C-MT clean and free of clutter.

- The SuperServer 5014C-MT weighs approximately 38 lbs (~17.3 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

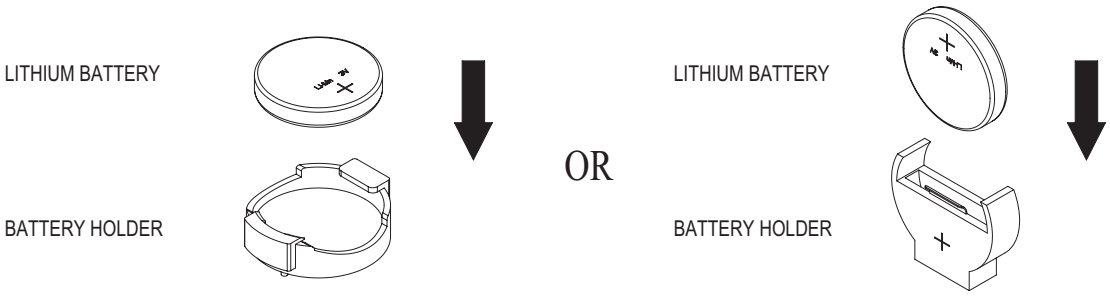
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 5014C-MT is operating to assure proper cooling. Out of warranty damage to the 5014C-MT system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



4-5 Disposing of Electronic Equipment

Important!

All electronic equipment and batteries must not be disposed along with household waste. You must dispose of it properly by taking it to a collection point set up for taking such types of waste. Contact your local waste disposal agency for information on the nearest collection/deposit site.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the P8SCT motherboard into the SC813MT-300C chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

5-1 Handling the Motherboard

Electric-static discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the P8SCT motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electric Static Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation

This section explains the first step of physically mounting the P8SCT into the SC813MT-300C chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. Accessing the inside of the system (see Figure 2-5)

Two release buttons are located on the top cover of the chassis. Depressing both of these buttons while pushing the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. (If already installed in a rack, you must first release the retention screws that secure the unit to the rack. Then grasp the two handles on either side and pull the unit straight out until the rails lock into place.)

2. Check compatibility of motherboard ports and I/O shield

The P8SCT requires a chassis big enough to support a 12" x 9.5" motherboard, such as Supermicro's SC813MT-300C 1U rackmount. Make sure that the I/O ports on the motherboard align properly with their respective holes in the I/O shield at the back of the chassis.

3. Mounting the motherboard onto the motherboard tray

Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis. Insert screws into all the mounting holes on your motherboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the motherboard ground to provide a continuous ground for the system.

5-3 Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-9 for connector locations.)

- CD-ROM cable (IDE)
- Front side USB port cables (USB3/4)
- Front side COM port cable (COM2)
- SATA drive cable (SATA#0-3)
- Control Panel cable (JF1)

Connecting Power Cables

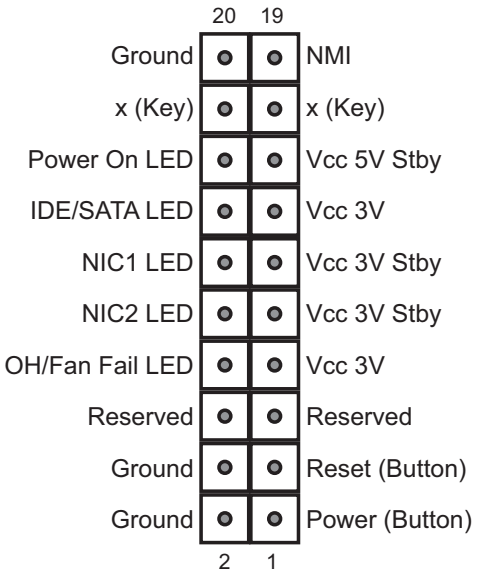
The P8SCT has a 24-pin primary power supply connector (PW1) for connection to the ATX power supply. In addition, there is a 4-pin secondary power connector (PW2) that also must be connected to your power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

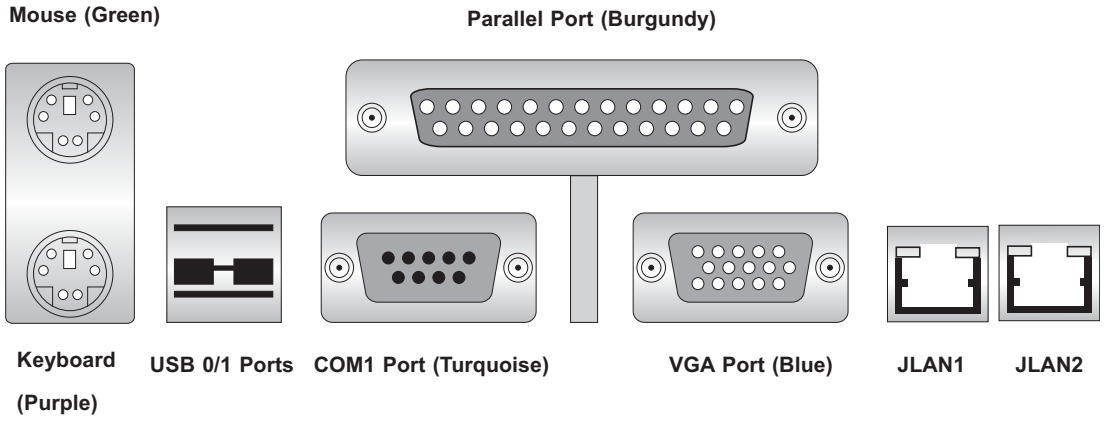
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



Note: The COM2 port is a header on the motherboard, located near the PCI #1 slot at the corner of the motherboard. COM2 should be connected to the COM port at the front of the chassis.

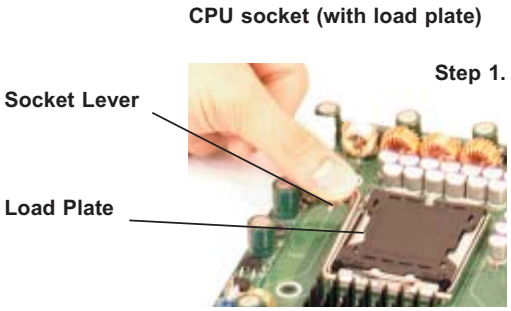
5-5 Installing the Processor

Avoid placing direct pressure to the top of the processor package. Always remove the power cord first before adding, removing or changing any hardware components.

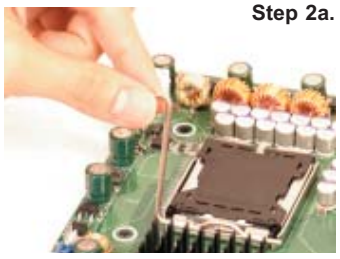
Processor Support

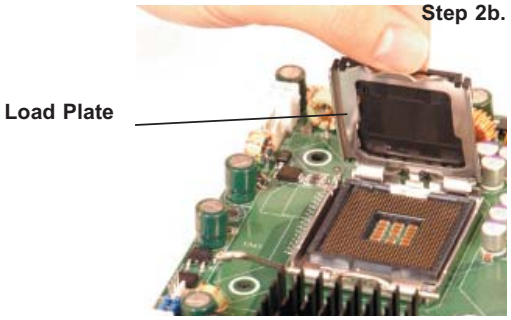
The P8SCT has a single LGA775 socket, which supports Intel Pentium 4 (800 MHz FSB) or Intel Celeron (533 MHz FSB) processors.

1. Press the socket lever to release the load plate that covers the CPU socket from its locking position.

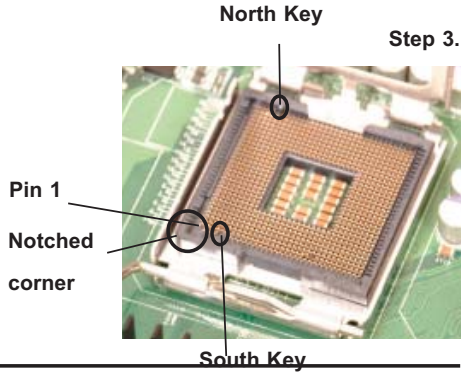


2. Carefully lift the socket lever up to open the load plate.





3. Locate Pin 1 on the CPU socket. (Pin 1 is closest to the notched corner of the housing.) Please note that a North key and a South key (notches) are located at opposite sides of the CPU housing.

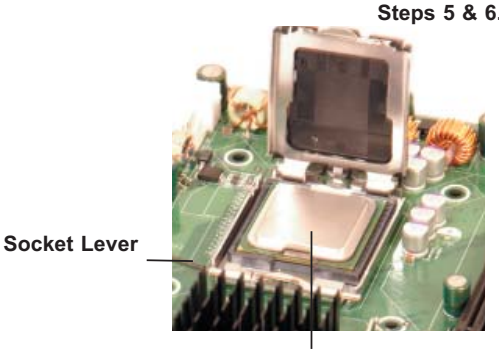


4. Use your thumb and index finger to hold the CPU at the north center and south center edges of the CPU.

Step 4.

5. Align Pin 1 of the CPU with Pin 1 of the socket. Once aligned, carefully lower the CPU straight down and into the socket. *Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface of the socket or against any pins of the socket, which may damage the CPU and/or the socket.*

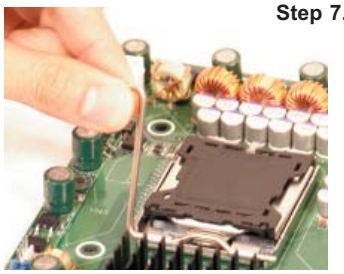
Steps 5 & 6.



CPU in the CPU socket

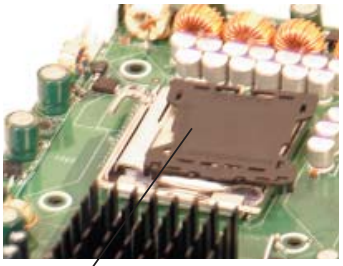
6. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

Step 7.



7. Use your thumb to gently press the lever down and lock it in the hook.

Step 8.



8. If the CPU is properly installed into the socket, the black plastic cover will be automatically released from the load plate when the lever is pushed into the hook. Remove the cover from the motherboard.

Plastic cap is released from the load plate when the CPU is properly installed.

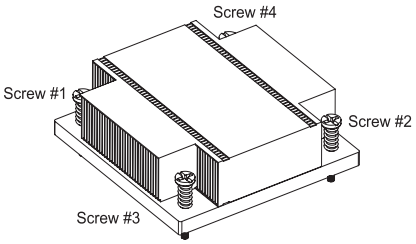
Heatsink Installation

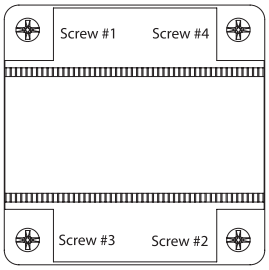
1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

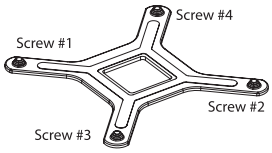
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

3. Screw in two diagonal screws (eg. the #1 and the #2 screws) until just snug (do not fully tighten the screws, which may damage the CPU).

4. Finish the installation by fully tightening all four screws.







Retention mechanism (preinstalled)

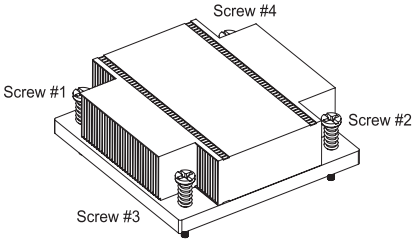
Heatsink Removal

1. Unscrew and remove the heatsink screws from in the sequence as show in the picture on the right.

2. Hold and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when loosening the heatsink!)

3. Once the heatsink is loosened, remove it from the CPU socket.

4. Clean the surfaces of the CPU and the heatsink to remove the old thermal grease. Reapply the proper amount of thermal grease on the surface before re-installing the heatsink.



5-6 Installing Memory

CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

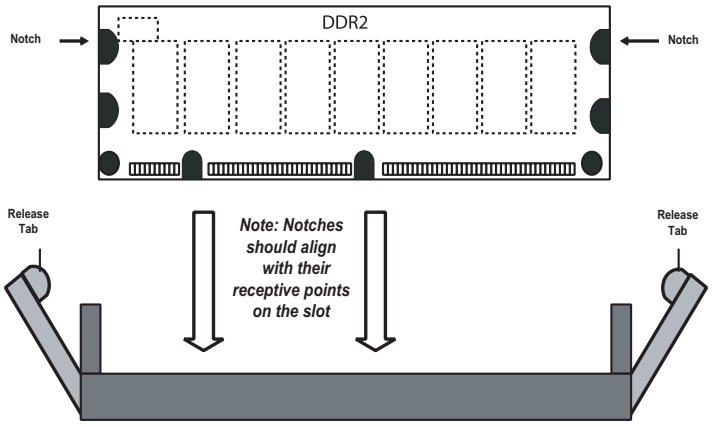
1. Memory support

The P8SCT supports up to 4 GB of dual or single-channel, unbuffered ECC *or* unbuffered non-ECC DDR2-533 or DDR2-400 SDRAM. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots. Populating two slots at a time (starting with Bank 1: DIMM1A and DIMM 1B) with the same size and type of memory modules will result in dual-channel (two-way interleaved) operation, which is faster than single channel operation.

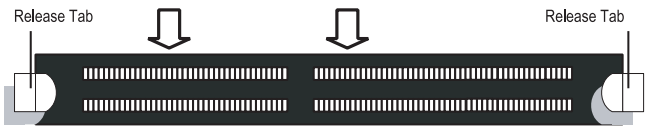
2. Installing memory modules

Insert each memory module vertically. Pay attention to the notches along the bottom of the module to prevent inserting it incorrectly. Gently press down on the DIMM module until it snaps into place in the slot (see Figure 5-3).

Figure 5-3. DIMM Installation



Top View of DDR2 Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notches.

To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

5-7 Adding PCI Cards

1. 64-bit PCI-X slot

The 5014C-MT has a riser card (p/n CSE-RR1U-X) designed specifically for use in the SC813MT-300C 1U rackmount chassis (included with the system). This riser card allows a 64-bit, 133 MHz (3.3V) standard size PCI-X card to sit at a 90 degree angle so it can fit inside the chassis.

2. PCI card installation

The riser card has already been preinstalled into the motherboard. Perform the following steps to add a PCI add-on card:

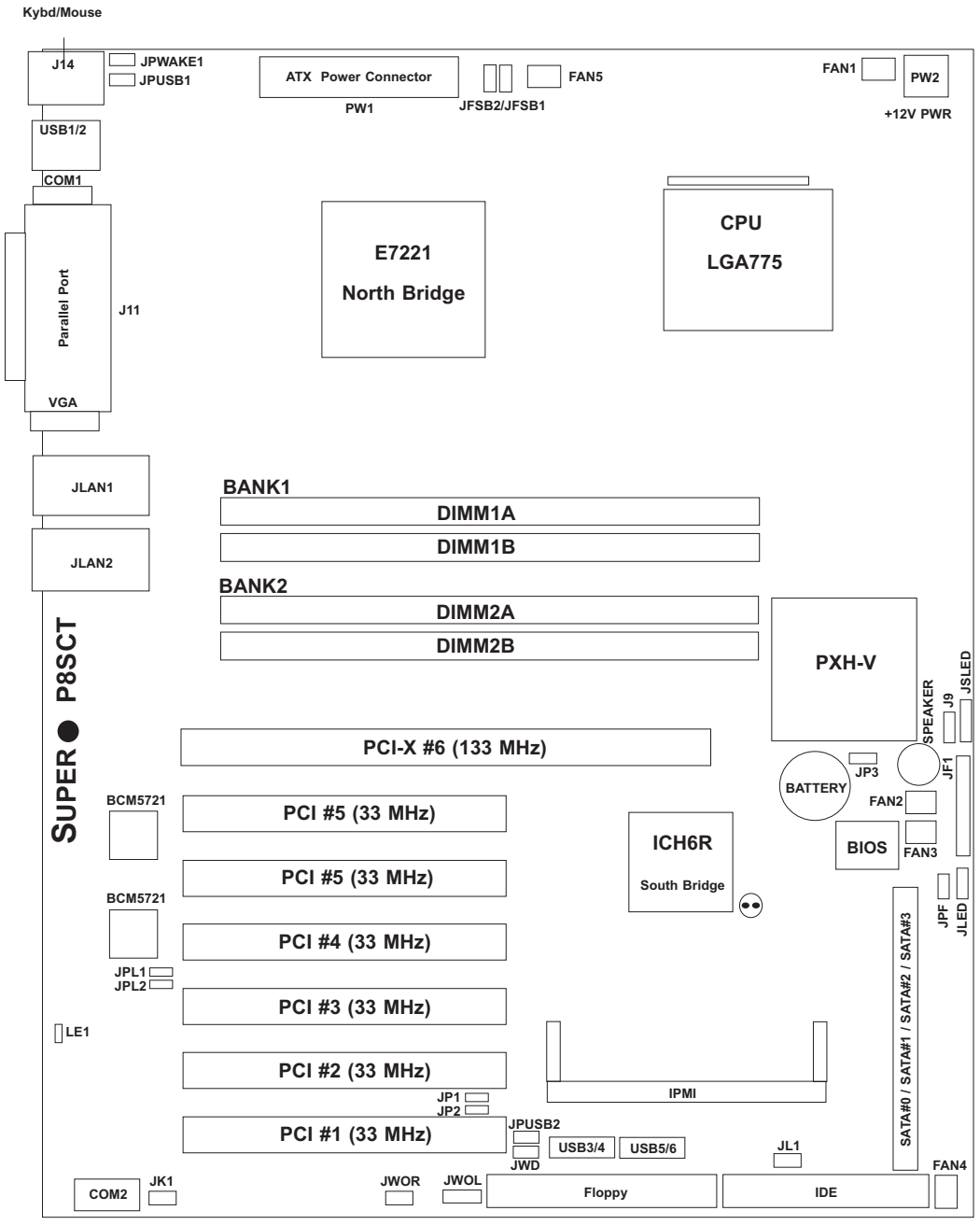
1. Remove the appropriate PCI slot shield by releasing the locking tab.

2. Insert the add-on card into the riser card.

3. Secure the add-on card with the locking tab.

5-8 Motherboard Details

Figure 5-4. P8SCT Layout
(not drawn to scale)



Jumpers not indicated are for test purposes only.

Warning: Using the wrong type of onboard CMOS battery or installing it upside down may result in explosion.

P8SCT Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	See Section 5-10
JP1/JP2	SMBus to PCI Enable/Disable	Open (Disabled)
JP3	PCI-X Slot Frequency	Closed (133 MHz)
JPF	Power Force-On	Open (Disabled)
JPL1/JPL2	JLAN1/JLAN2 Enable/Disable	Pins 1-2 (Enabled)
JFSB1/JFSB2	Front Side Bus Speed	Pins 1-2 (Auto)
JPUSB1	USB1/2 Wakeup Enable/Disable	Pins 2-3 (Disabled)
JPUSB2	USB3/4, 5/6 Wakeup Enable/Disable	Pins 2-3 (Disabled)
JPWAKE1	Keyboard/Mouse Wakeup En/Disable	Pins 1-2 (Enabled)
JWD	Watchdog	Pins 1-2 (Reset)

Connector	Description
COM1/COM2	COM1/COM2 Serial Port Connectors
Fan1-5	System Fan Headers
Floppy	Floppy Disk Drive Connector
IDE	IDE Hard Disk Drive Connector
IPMI	IPMI 2.0 Header
J9	Internal Speaker (Buzzer) Header
J11	Parallel (Printer) Port
J14	Keyboard/Mouse Ports
JF1	Front Control Panel Connector
JK1	Keylock Header
JL1	Chassis Intrusion Header
JLAN1/2	Gigabit Ethernet Ports
JOH1	Overheat LED Header
JSLED	SATA LED Header
JWOL	Wake-on-LAN Header
JWOR	Wake-on-Ring Header
LE1	+5V Standby Voltage Warning LED
PW1	24-pin ATX Power Connector
PW2	4-pin (12V) ATX Power Connector
SATA#0 - #3	ICH6R Serial ATA Connectors
USB1/2	Universal Serial Bus Ports
USB3/4/5/6	Universal Serial Bus Headers
VGA	VGA (Monitor) Port

5-9 Connector Definitions

Power Supply Connectors

The primary power supply connector (PW1) on the P8SCT meets the SSI (Superset ATX) 24-pin specification. Refer to the table on the right for the pin definitions of the ATX 24-pin power connector. You must also connect the 4-pin (PW2) processor power connector to your power supply. Refer to the table below right for the PW2 (12V) connector.

Important: you must connect PW2 to your power supply to meet the ATX safety requirements.

ATX Power 24-pin Connector Pin Definitions (PW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Required Connection

+12V 4-pin Power Pin Definitions (PW2)

Pins	Definition
1 & 2	Ground
3 & 4	+12V

PW_ON Connector

The PW_ON connector is on pins 1 and 2 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	PW_ON
2	Ground

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

NIC2 (JLAN2) LED

The LED connections for JLAN2 are on pins 9 and 10 of JF1. Attach LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

NIC1 (JLAN1) LED

The LED connections for JLAN1 are on pins 11 and 12 of JF1. Attach LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

IDE/SATA LED

The IDE/SATA LED connection is located on pins 13 and 14 of JF1. This LED is used to display all IDE and SATA activity. See the table on the right for pin definitions.

IDE/SATA LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1 (use JLED for a 3-pin connector). This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	5V Stby
16	Control

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Fan Headers

There are five fan headers on the P8SCT, which are designated FAN1, FAN2, FAN3, FAN4 and FAN5. Connect the fan on your CPU heatsink to the FAN1 header. See the table on the right for pin definitions.

Fan Header Pin Definitions (Fan1-5)

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J14. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions (J14)

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Chassis Intrusion

The Chassis Intrusion header is designated JL1. See the board layout for the location of JL1 and the table on the right for pin definitions.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Intrusion Input
2	Ground

Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel and four additional USB headers located on the motherboard. The headers, labeled USB3/4 and USB5/6, can be used to provide front side USB access (cables not included). See the tables on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB0/1)

USB0/1/3/5		USB4/6	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

Wake-On-LAN

The Wake-On-LAN header is designated JWOL on the motherboard. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (JWOL)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

JLAN1/2 (Ethernet Ports)

Two Ethernet ports (designated JLAN1 and JLAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and be "awakened" by an incoming call when in the suspend state. See the table on the right for pin definitions. You must also have a WOR card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)

Pin#	Definition
1	Ground (Black)
2	Wake-up

SATA LED

The SATA LED header is designated JSLED. This header is used to display all SATA activity. See the table on the right for pin definitions.

SATA LED Pin Definitions (JSLED)

Pin#	Definition
1	HD Active
2	HD Active
3	HD Active
4	HD Active
5	NC

Serial Ports

Two serial ports are included on the motherboard: COM1 is a port located under the parallel port and COM2 is a header located on the motherboard near the floppy connector. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

Power LED

The Power LED header is located on JLED. This header provides LED indication of power being supplied to the system. See the table on the right for pin definitions.

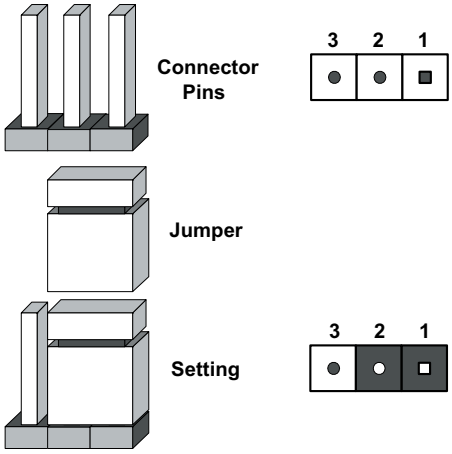
Power LED Pin Definitions (JLED)

Pin#	Definition
1	Anode
2	Key
3	Cathode

5-10 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.



Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.

CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS. To clear CMOS,

1) First power down the system and unplug the power cord(s)
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver
3) Remove the screwdriver (or shorting device)
4) Reconnect the power cord(s) and power on the system.

Speaker Connector

Use the header on J9 to enable either the internal or an external speaker. To use the internal system speaker, connect the speaker wires to pins 3-4. If you wish to use an external speaker, you should jump pins 1 and 2.

Speaker Jumper Pin Definitions (J9)	
Setting	Definition
Pins 1-2	External Speaker
Pins 3-4	Internal Speaker

USB Wake-Up

JPUSB1 and JPUSB2 are used to enable or disable USB Wake-Up, which allows you to wakeup the system by depressing a key on the keyboard or by clicking the mouse when either is connected to a USB port. JPUSB1 is for the USB1/2 ports and JPUSB2 is for the USB3/4 and USB5/6 headers. Enable the jumper to allow the system to be woken up from an S1 or S3 state in Windows OS. See the table on the right for jumper settings. The default setting is disabled.

USB Wake-Up Jumper Settings (JPUSB1/2)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Keyboard Wake-Up

The JPWAKE1 jumper is used to allow the system to be woken up by depressing a key on the keyboard from an S1 or S3 state in Windows OS. See the table on the right for jumper settings. Your power supply must meet ATX specification 2.01 or higher and supply 720 mA of standby power to use this feature.

Keyboard Wake-Up Jumper Settings (JPWAKE1)

Jumper Setting	Definition
Pins 1-2	Disabled
Pins 2-3	Enabled

System Power Force On

Jumper JPF allows you to enable or disable the Force-Power-On function. If enabled, system power will always stay on. If disabled (the normal setting), the user needs to press the power button to power on the system.

System Power Force On Jumper Settings (JPF)

Jumper Setting	Definition
Closed	Force On
Open	Disabled

Watch Dog Enable/Disable

JWD enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings (JWD)

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Note: when Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

JLAN1/JLAN2 Enable/ Disable

Change the setting of jumper JPL1 to enable or disable the JLAN1 port and JPL2 to enable or disable the JLAN2 port on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

JLAN1/2 Enable/Disable Jumper Settings (JPL1/2)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SMBus to PCI

Jumpers JP1, JP2 allow you to connect PCI/PCI-X slots to the System Management Bus. The default setting is "Open" to disable the connection. See the table on the right for jumper settings.

SMBus to PCI Enable/Disable Jumper Settings (JP1/JP2)

Jumper Setting	Definition
Closed	Enabled
Open	Disabled

PCI-X Slot Speed Select

JP3 allows you to select the Frequency for the PCI-X slot. The default setting is Closed. (Please do not change the default setting.) See the table on the right for pin definitions.

PCI-X Slot Speed Select Jumper Settings (JP3)	
Jumper Setting	Definition
Open	133 MHz
Closed	100 MHz

CPU Front Side Bus Speed

JFSB1 and JFSB2 allow you to set the Front Side Bus Frequency. See the table on the right for pin definitions. (The default setting is Auto and should not be changed.)

CPU Front Side Bus Speed Pin Definitions (JFSB1/JFSB2)		
JFSB1	JFSB2	Definition
Pins 1-2	Pins 1-2	Auto
Pins 2-3	Pins 2-3	266 MHz
Pins 2-3	Open	200 MHz
Open	Open	166 MHz
Open	Pins 2-3	133 MHz

Note: Clock values are shown, employ a 4x multiplier for actual front side bus speed. Both jumper settings should remain on Auto.

5-11 Onboard Indicators

JLAN1/JLAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb LAN port, the yellow (right) LED indicates activity while the left LED may be green, orange or off to indicate the speed of the connection. See the table on the right for the functions associated with the left (activity speed) LED.

JLAN Left LED (Connection Speed Indicator)	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

5-12 Parallel Port, Floppy and IDE Drive Connections

Use the following information to connect the IDE hard disk drive cables.

- A red mark on a wire typically designates the location of pin 1.

- The 80-wire ATA100/66 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this new technology offers. The blue connector connects to the onboard IDE connector interface and the other connector(s) to your hard drive(s). Consult the documentation that came with your disk drive for details on actual jumper locations and settings for the hard disk drive.

Parallel Port Connector

The parallel port is located on J11. See the table at right for pin definitions.

Parallel (Printer) Port Connector Pin Definitions (J11)

Pin#	Definition	Pin #	Definition
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	Write Data
23	PE	24	Write Gate
25	SLCT	26	NC

Floppy Connector

The floppy connector is located between the IDE slot and the IPMI Socket. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

IDE Connector

There are no jumpers to configure the onboard IDE interface "IDE". See the table below for pin definitions.

IDE Drive Connectors
Pin Definitions (IDE)

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC813MT-300C chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required

The only tool you will need to install components and perform maintainance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View

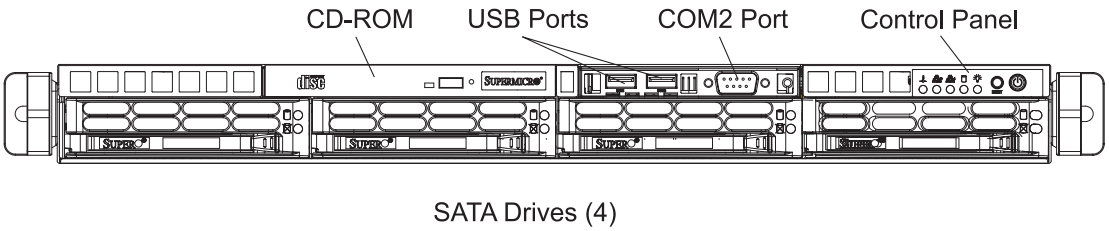
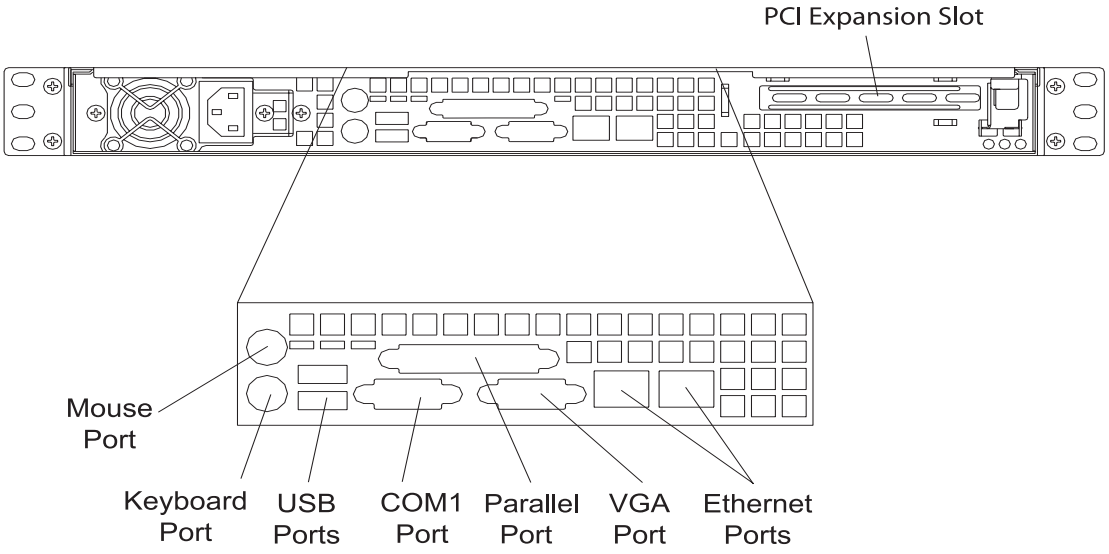


Figure 6-2. Chassis Rear View



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the motherboard to provide you with system control buttons and status indicators. These wires have been bundled together in a ribbon cable to simplify the connection. Connect the cable from JF1 on the motherboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

Three 4-cm high-performance fans provide the cooling for the SuperServer 5014C-MT. The chassis includes air seals under the fans and at the chassis cross section, which separates the drive bay area from the motherboard area of the chassis to promote better airflow. It is highly important that the air seal is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis.

The fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by a setting in BIOS (see page 7-13).

System Fan Failure

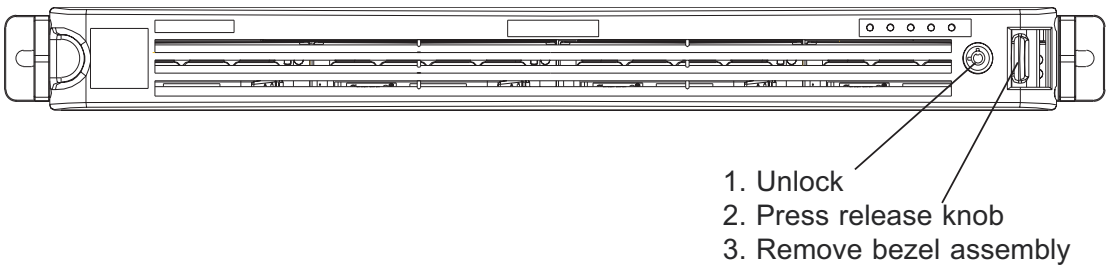
If a fan fails, you will need to have it replaced with the same type. Contact your vendor or Supermicro for information on replacement fans.

6-4 Drive Bay Installation/Removal

Removing the Front Bezel

If your system has a front bezel (optional) attached to the chassis, you must first remove it to gain access to the drive bays. To remove the bezel, first unlock the front of the chassis then press the release knob (see Figure 6-3). Carefully remove the bezel with both hands. A filter located within the bezel can be removed for replacement/cleaning. It is recommended that you keep a maintenance log of filter cleaning/replacement, since its condition will affect the airflow throughout the whole system.

Figure 6-3. Removing the Front Bezel



Accessing the Drive Bays

SATA Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace SATA drives. Proceed to the next step for instructions.
Note: The operating system you use must have RAID support to enable the hot-swap capability of the SATA drives.

CD-ROM Drive: For installing/removing a CD-ROM drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "CD-ROM Drive Installation" section in this chapter for instructions. Note that only a "slim" CD-ROM drive will fit into the 5014C-MT.

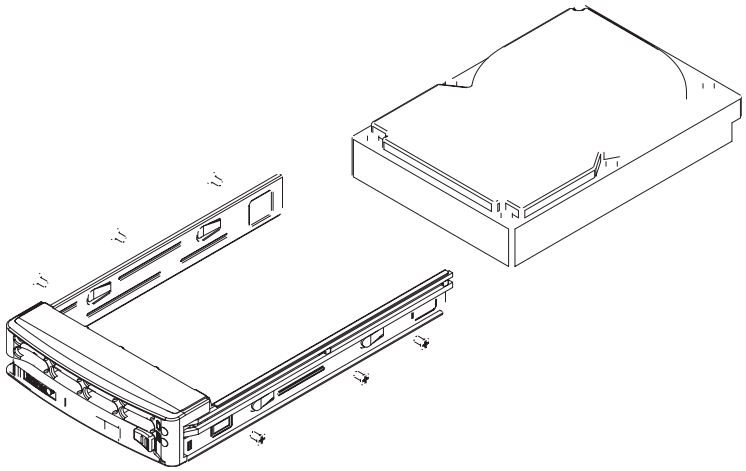
Use caution when working around the SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane. Also, regardless of how many SATA drives are installed, all four drive carriers must remain in the chassis to maintain proper airflow.

Serial ATA Drive Installation

1. Mounting a Serial ATA drive in a drive carrier

The SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the system. For this reason, even empty carriers without drives installed must remain in the chassis. To add a new SATA drive, install it into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier. Secure the drive to the carrier with six screws, as shown in Figure 6-4.

Figure 6-4. Mounting a Drive in a Carrier



2. Installing/removing hot-swap SATA drives

The SATA drive carriers are all easily accessible at the front of the chassis. These are (with RAID enabled) hot-swap drives, meaning they can be removed and installed without powering down the system. To remove a carrier, push the release button located beside the drive LEDs. Then swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

Note: Your operating system must have RAID support to enable the hot-plug capability of the SATA drives.

Serial ATA Backplane

The Serial ATA drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security. The backplane is already preconfigured, so there are no jumpers or switches present on it.

The SATA ports are assigned differently based on the setup of the system. Note that these assignments will also affect the drive activity LEDs:

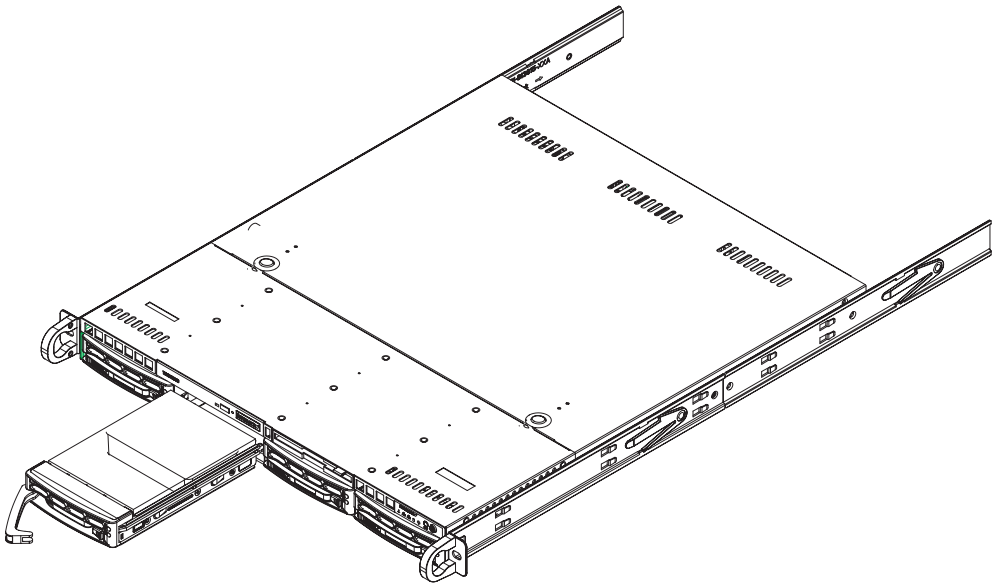
Onboard Assignments (set by ICH6R, no Operating System)
SATA 0: Primary Master
SATA 1: Secondary Master
SATA 2: Primary Slave
SATA 3: Secondary Slave

Operating System Assignments (no LSI driver installed and RAID disabled)
SATA 0: Primary Master
SATA 1: Primary Slave
SATA 2: Secondary Master
SATA 3: Secondary Slave

Operating System Assignments (LSI driver installed and Mega RAID enabled)*
SATA 0: Primary Master
SATA 1: Secondary Master
SATA 2: Primary Slave
SATA 3: Secondary Slave

*RAID must first be enabled in BIOS (see p. 7-6) and then the LSI driver should be installed. The LSI driver is included on the CD-ROM included with the system.

Figure 6-5. Removing an SATA Drive from the Server



CD-ROM Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM drive bay. The 5014C-MT accomodates only slim CD-ROM drives. Side mounting brackets are needed to mount a slim CD-ROM drive in the 5014C-MT server.

You must power down the system before installing or removing a CD-ROM drive. First, release the retention screws that secure the server unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

With the chassis cover removed, unplug the power and data cables from the drive. Then locate the locking tab at the rear of the drive. It will be on the left side of the drive when viewed from the front of the chassis. Pull the tab away from the drive and push the drive unit out the front of the chassis. Add a new drive by following this procedure in reverse order. You may hear a faint *click* of the locking tab when the drive is fully inserted. Remember to reconnect the data and power cables to the drive before replacing the chassis cover and restoring power to the system.

6-5 Power Supply

The SuperServer 5014C-MT has a single 300 watt power supply. This power supply has the capability of operating at 100 - 240 input volts. Depress the main power button on the front of the chassis and then unplug the AC power cord to completely remove power from the system before removing the power supply.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (PWS-0054 - see contact infomation in Chapter 1).

Replacing the Power Supply

1. Accessing the inside of the system

To replace a power supply, you must first remove the top chassis cover. To do so, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and push it away from you. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Removing the power supply

First unplug the power cord from the system. To remove the failed power unit, remove the two screws on the back of the power supply, which secure it to the chassis. You can then lift the unit straight out of the chassis. (The power cord should have already been removed.)

3. Installing a new power supply

Replace the failed unit with another unit of the same wattage. It is highly recommended to replace it with the exact same power supply. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit. Before reconnecting the power cord, make sure the power switch on the power supply is in the off position. Then reconnect the power cord, replace the chassis top cover and push the unit back into the rack. Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AwardBIOS for the P8SCT. The Award ROM BIOS is stored in a Flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to the BIOS that are not reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The AwardBIOS Flash chip stores the system parameters, such as amount of memory, type of disk drives and video displays, etc. CMOS requires very little power. When the computer is turned off, a back-up battery provides power to the BIOS Flash chip, enabling it to retain the system parameters. Each time the computer is powered-on, the computer is then configured with the values stored in the BIOS ROM by the system BIOS, which gains control when the computer is powered on.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 7-3 gives detailed descriptions of each parameter setting in the Setup utility.

7-2 Running Setup

Optimal default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the Main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the AwardBIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after turning the system on, or
2. When the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Del> key to activate the Main Setup Menu.

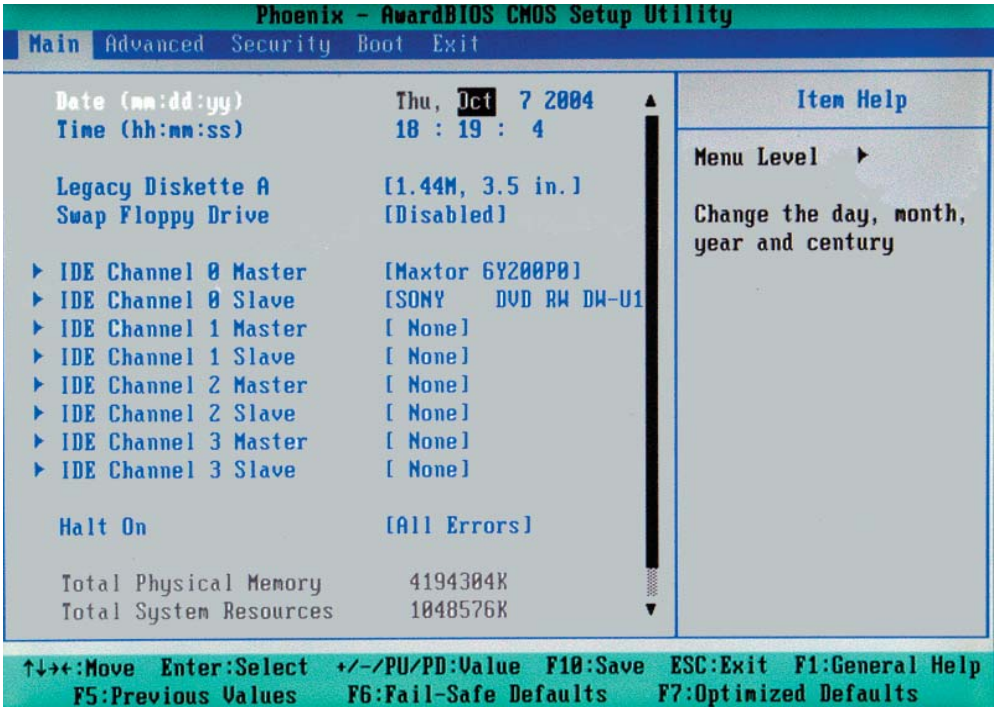
Press DEL to enter SETUP

7-3 Main BIOS Setup

All Main Setup options are described in this section. The Main BIOS Setup screen is displayed below.

Use the <Up> <Down> arrow keys or the <Tab> key to move among the different settings in the above menu.

Press the <Esc> key to exit the CMOS Setup Menu and use the <Left> <Right> arrow keys to enter the other categories of the BIOS settings. The next section is described in detail to illustrate how to navigate through the menus.


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Security Boot Exit
Date (mm:dd:yy) Thu, Oct 7 2004
Time (hh:mm:ss) 18 : 19 : 4
Legacy Diskette A [1.44M, 3.5 in.]
Swap Floppy Drive [Disabled]
IDE Channel 0 Master [Maxtor 6Y200P0]
IDE Channel 0 Slave [SONY DVD RW DW-U1
IDE Channel 1 Master [None]
IDE Channel 1 Slave [None]
IDE Channel 2 Master [None]
IDE Channel 2 Slave [None]
IDE Channel 3 Master [None]
IDE Channel 3 Slave [None]
Halt On [All Errors]
Total Physical Memory 4194304K
Total System Resources 1048576K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Date/Time

Set the system date and time. Key in the correct information in the "mm", "dd" and "yy" fields. Press the "Enter" key to save the data.

Legacy Diskette A/Legacy Diskette B

This setting allows the user to set the type of floppy disk drive installed as diskette A and diskette B. The options are None, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

Swap Floppy Drive

If the system has two floppy drives, enable this feature to assign physical drive B to logical drive A or physical drive A to logic drive B. The options are Enabled and **Disabled**.

▶ IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master/Slave, IDE Channel 3 Master/Slave

These settings allow the user to set the parameters of the IDE Channel 0 Master/ Slave to IDE Channel 3 Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are:

IDE HDD Auto-Detection

This option allows the user to determine the manner in which the AwardBIOS sets the settings for IDE Channel 0 to IDE Channel 3 Master Devices. The options are "None", "**Auto**" and "Manual."

IDE Channel 0 to IDE Channel 3 Master

Press the <Enter> key to activate the 'IDE HDD Auto-Detection" function, which will allow the BIOS to automatically detect the status of the IDE HDD installed in the system, such as the size, the number of cylinders, the configurations of items such as Head, Precomp, Landing Zone and Sector. The options are None, **Auto** and Manual.

Access Mode

This item determines the location through which the AwardBIOS accesses the IDE Primary Master Device. The settings are "CHS", "LBA", "Large", and "**Auto**".

Halt On

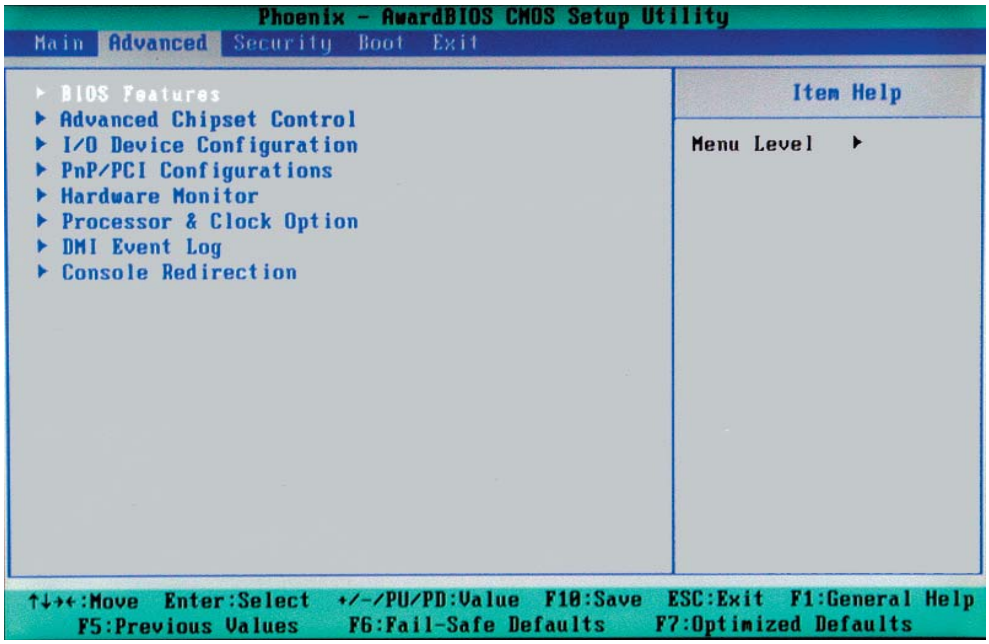
This item allows the user to select the situation in which the BIOS will stop the POST process and notify you about the status of the system. The settings are **"All Errors"**, "No Errors", "All, But Keyboard", "All, But Diskette", and "All, But Disk/Key".

Total Physical Memory/Total System Resources/Total Available Memory

These are displays that inform you how much of each type of memory is recognized as being present in the system.

7-4 Advanced BIOS Setup

Choose the Advanced BIOS Setup from the Award BIOS main menu with the Left/ Right arrow keys. You should see the following display. Select one of the items in the left frame of the screen to go to the sub screen for that item. The Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.



7-4.1 Advanced BIOS Features

When the item of Advanced BIOS Features is highlighted, press the <Enter> key to activate the submenu below:

Quick Boot

If enabled, this feature allows the system to skip certain tests while booting. This will decrease the time needed to boot the system. The settings are "**Enabled**" and "Disabled".

Quiet Boot

This feature allows the user to enable "Quiet Boot". When set to Enabled, the BIOS is in the graphic mode and displays only an OEM Logo during POST while booting. If an error occurs, The system will automatically switch to the text mode. The options are "**Enabled**" and "Disabled".

ACPI Function

Select "Enabled" to enable BIOS Support for the Advanced Configuration and Power Interface features. The settings are "**Enabled**" or "Disabled".

MPS Version Control

This setting allows you to select the MPS version for your operating system. The options are "1.1" and "**1.4**".

Agent After Boot

Set this option to Enabled to keep the "Agent" of Remote Access running after OS bootup. The options are "Enabled" and "**Disabled**".

PWRON After PWR-Fail

This setting allows the user to determine how the system will respond when power is reapplied after a system shut down caused by power failure. The options are "**Off**", "On" and "Former-Sts".

Watch Dog Timer Select

This setting is for enabling the Watch Dog feature. The options are Enabled and **Disabled**. (Please refer to Chapter 2 for more details.)

7-4.2 Advanced Chipset Control

DRAM Data Integrity Mode

If enabled, this feature allows the data stored in the DRMA memory to be integrated for faster data processing. The options are **ECC** and Non-ECC.

On-Chip Frame Buffer Size

This setting allows you to set On-Chip Frame Buffer Size. The options are "1 MB" and "**8 MB.**"

SATA Mode

This feature allows you to select the channel for SATA mode. The options are "**IDE**", "RAID" and "AHCI (Advanced Host Controller Interface)."

On-Chip Serial ATA

Select "Disabled" to disable the SATA Controller. Select "Auto" to allow the BIOS to configure the SATA Controller automatically. Select "Combined Mode" to use PATA and SATA Combined Mode. The maximum of 2 IDE drives in each channel is allowed. Select "**Enhanced Mode**" to enable both SATA and PATA. This mode will support up to 6 IDE drives. Select "SATA Only" to allow SATA to operate in "Legacy Mode".

PATA IDE Mode

When the item -On-chip Serial ATA is set to Combined Mode, the user can select either Primary or Secondary for Parallel ATA IDE. The options are **Primary** and Secondary. If On-chip Serial ATA is set to Enhanced Mode, only Serial ATA will be activated, and Primary PATA IDE will be available. Secondary PATA IDE will not be available.

SATA Port

This setting allows you configure the setting for the SATA port. The options are **P1** and P3 is Secondary.

USB Controller

This setting allows you to enable or disable the USB Controller. The options are **Enabled** and Disabled.

USB 2.0 Controller

This setting allows you to enable or disable USB 2.0 (EHCI) Controller. The options are **Enabled** and Disabled.

USB Legacy Support

This setting allows you to enable or disable the functions of USB, Keyboard/Mouse under POST and DOS. The options are **"Disabled"** and "Enabled."

7-4.3 I/O Device Configuration

Onboard Serial Port1/Onboard Serial Port2

This setting allows the user to set the address and the corresponding IRQ for Serial Port1 and Serial Port 2. The options are "Disabled" , "3F8/IRQ4", "2F8/IRQ3", "3E8/IRQ4", "2E8/IRQ3", and "Auto". The default setting for Serial Port1 is "**3F8/IRQ4**" and the default for Port 2 is "**2F8/IRQ3**".

Onboard Parallel Port

This setting allows the user to set the address and the corresponding IRQ for the onboard parallel port. The options are "Disabled", "**378/IRQ7**", "278/IRQ5" and "3BC/IRQ7".

Parallel Port Mode

This setting sets the mode for the onboard Parallel port. The options are "**SPP**," "EPP", "ECP" "ECP+EPP" and "Normal".

EPP Mode Select

This setting allows the user to select the EPP port type. The options are "EPP 1.9" and "**EPP 1.7**".

ECP Mode Use DMA

This setting allows the user to select the DMA channel for the ECP mode (port) to use. The options are "1" and "**3**".

Power On Function

This setting allows the user to decide which method to use to power on the system. The options are "Password", "Hot Key", "Mouse Left", "Mouse Right", "Any Key", and "**Button Only**".

KB Power On Password

This setting allows the user to enter the Password when the system is powered on via keyboard.

Hot Key Power On

This setting allows the user to decide which hot-keys to use in order to power on the system. The options are "**Ctrl-F1**", "Ctrl-F2, Ctrl-F3", "Ctrl-F4", "Ctrl-F5", "Ctrl-F6", "Ctrl-F7", and "Ctrl-F8".

7-4.4 PnP/PCI Configuration

Choose PCI/PnP Configurations from the Award BIOS main menu with the Left/ Right arrow keys. You should see the following display:

Initial Display From

This feature sets the device that will initiate the monitor display when the system is first turned on. The options are "**PCI Slot**" and "PCI Ex(press)".

Reset Configuration Data

Enabling this setting resets the extended system configuration data when you exit setup. Do this when you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot reboot the system. The options are "Enabled" and "**Disabled.**" If this feature is set to Enabled, the following item will display:

Resources Controlled By

This setting allows the BIOS to automatically configure all boot and Plug and Play compatible devices. If you choose Auto, you cannot select the IRQ, DMA and memory base address fields, because the BIOS automatically assigns them. The options are "**Auto (ESCD)**" and "Manual".

IRQ Resources

If the above item-Resources Controlled By" is set to manual, the user is allowed to assign an IRQ to a PCI Device or Reserve an IRQ for other purpose. The options are: **Auto (ESCD)** and Manual.

IRQ-3,
IRQ-4,
IRQ-5,
IRQ-7,
IRQ-9,
IRQ-10,
IRQ-12,
IRQ-14,
IRQ-15

Onboard LAN Boot ROM

This feature allows the user to determine if the Boot ROMs of the Onboard LAN chips should be activated. If activated, the user can boot the system from the Onboard LAN chips. The options are **Disabled**, LAN1, LAN2 and Both.

Maximum Payload Size

This setting allows the BIOS to set the maximum TLP Payload size for the PCI Express devices in the system. The options are: "128 (bytes)", "256 (bytes)", "512 (bytes)", "1024 (bytes)", "2048 (bytes)", and "**4096 (bytes)**".

▶PCI Express Root Port Function

PCI Express Port 1/PCI Express Port 2/PCI Express Port 3/PCI Express Port 4

Select "Enabled" to enable the PCI Express Root Port Functions for the PCI Express port specified. The options are: "Disabled", "Enabled", and "**Auto**".

PCI-E Compliance Mode

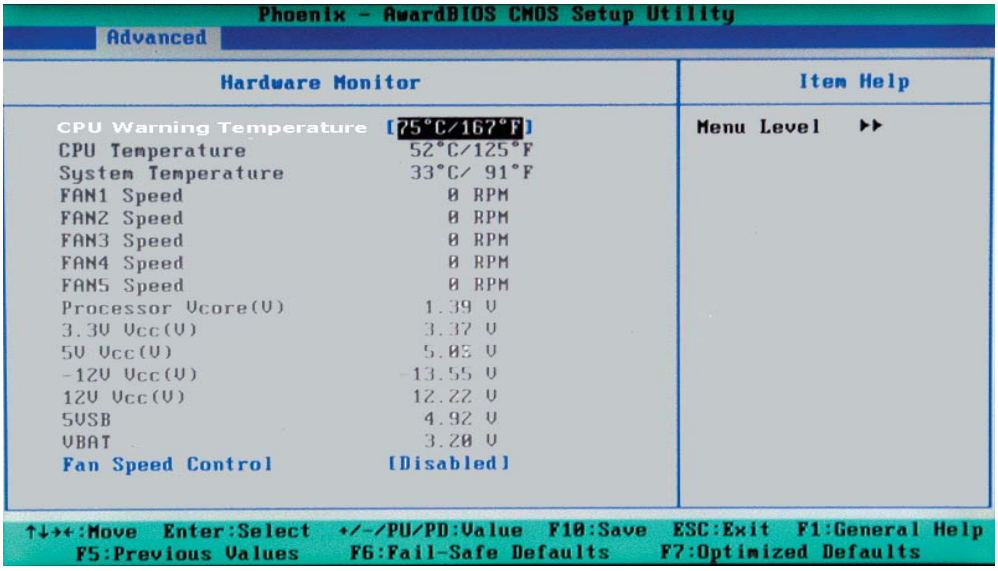
This features allows the BIOS to set the version of PCI-E Compliance Mode for the system. The options are: "**v.1.0a**" and "v.1.0".

PCI-X Frequency

This features allows the user to set the PCI-X slot frequency. The options are: "Auto, PCI-33 MHz, PCI-66 MHz, PCIX-66 MHz, **PCI-X 100 MHz** and PCI-X 133 MHz."

7-4.5 Hardware Monitors

There are only three settings on this menu (below). The rest of this menu shows various temperatures and voltage levels as indicated.



CPU Warning Temperature

This allows you to set the CPU warning temperature. If the CPU temperature reaches this threshold, an alarm will activate and a warning message will be displayed onscreen. The options are "Disabled", "50^{0}C/122^{0}F", "60^{0}C/140^{0}F", "65^{0}C/149^{0}F", "70^{0}C/158^{0}F", "**75^{0}C/167^{0}F**", "80^{0}C/176^{0}F" and "85^{0}C/185^{0}F".

Highlight this and hit <Enter> to see monitor data for the following items:

CPU Temperature:

System Temperature:

In addition to temperature monitoring, the status of the following items will also be displayed:

Fan 1 Speed-Fan 5 Speed

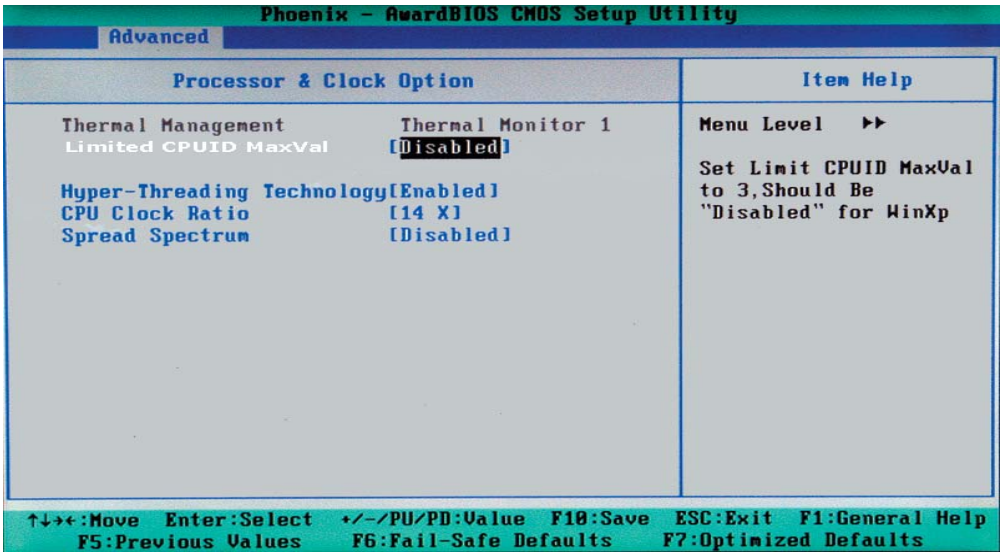
Voltage Monitoring

Processor Vcore (V), 3.3V Vcc (V), 5V Vcc (V), -12V Vcc (V), +12V Vcc (V), 5V Standby, VBAT

Fan Speed Control (Fan1-Fan5)

When set to 3-pin, the onboard fan speed is controlled by the CPU temperature. When the CPU temperature is higher, the fan speed will be higher as well. If set to "Disable," the fan speed control is disabled and the onboard fan will run at the full speed (12V) at all time. The options are "Disabled" and "**3-pin Server**".

7-4.6 Processor & Clock Options


Phoenix - AwardBIOS CMOS Setup Utility
Advanced
Processor & Clock Option
Item Help
Thermal Management Thermal Monitor 1
Limited CPUID MaxVal [Disabled]
Hyper-Threading Technology [Enabled]
CPU Clock Ratio [14 X]
Spread Spectrum [Disabled]
Menu Level ▸▸
Set Limit CPUID MaxVal to 3,Should Be "Disabled" for WinXp
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Thermal Management

This setting determines the method used by the BIOS to control the thermal management of the system. The options are "**Thermal Monitor 1** (On die throttling) " and "Thermal Monitor 2 (Ratio & VID transition)." (See Section 1-4 for details.)

Limit CPUID MaxVal

Select "Enabled" to set CUPID maximum value to 3. Select "Disabled" for Windows XP OS. The options are "Enabled" and "**Disabled**."

Hyper-Threading

Set this option to "Enabled" to activate the hyper-threading function of the CPUs. Enabling the hyper-threading function makes each CPU appear as two to any programs that support it (you must have OS support also). The settings are "Disabled" and "**Enabled**."

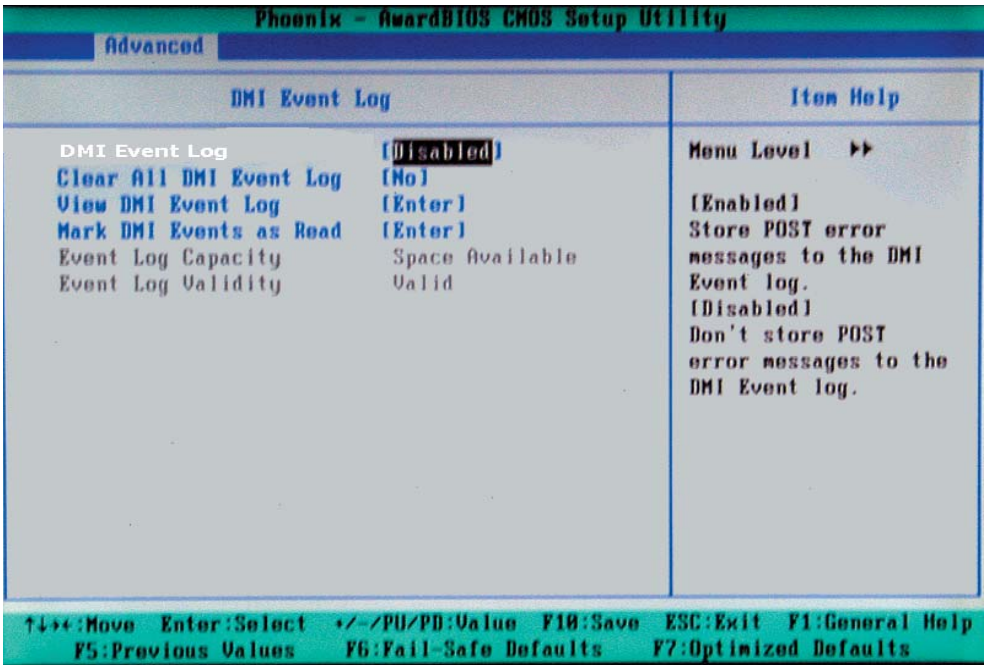
CPU Clock Ration

Use this option to set the clock ratio of the processor. Use number keys to enter a number. *The default setting is "14".*

Spread Spectrum

Spread Spectrum is a technique used to stabilize a system by reducing the level of ElectroMagnetic Interference. The options are "Enabled" and "**Disabled**."

7-4.7 DMI Event Log


Phoenix - AwardBIOS CMOS Setup Utility
Advanced
DMI Event Log
Item Help
DMI Event Log [Disabled]
Clear All DMI Event Log [No]
View DMI Event Log [Enter]
Mark DMI Events as Read [Enter]
Event Log Capacity Space Available
Event Log Validity Valid
Menu Level ▸▸
[Enabled]
Store POST error messages to the DMI Event log.
[Disabled]
Don't store POST error messages to the DMI Event log.
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

DMI Event Log

This setting allows you to Enable or Disable the function of DMI Event Logging. The options are **Disabled** and Enabled.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The default setting is **"Yes."**

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

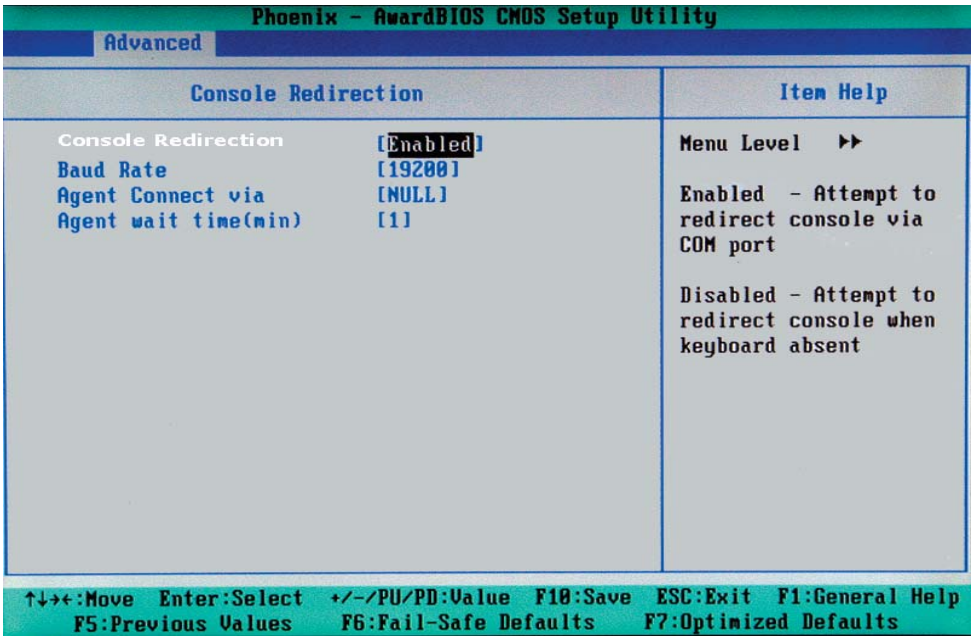
Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

7-4.8 Console Redirection


Phoenix - AwardBIOS CMOS Setup Utility
Advanced
Console Redirection
Item Help
Console Redirection [Enabled]
Baud Rate [19200]
Agent Connect via [NULL]
Agent wait time(min) [1]
Menu Level ▸▸
Enabled - Attempt to redirect console via COM port
Disabled - Attempt to redirect console when keyboard absent
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Console Redirection

This setting allows you to Enable or Disable the function of Console Redirection. The options are **Disabled** and Enabled.

BAUD Rate

Select the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K and 115.2K [-bits per second].

Agent Connect Via

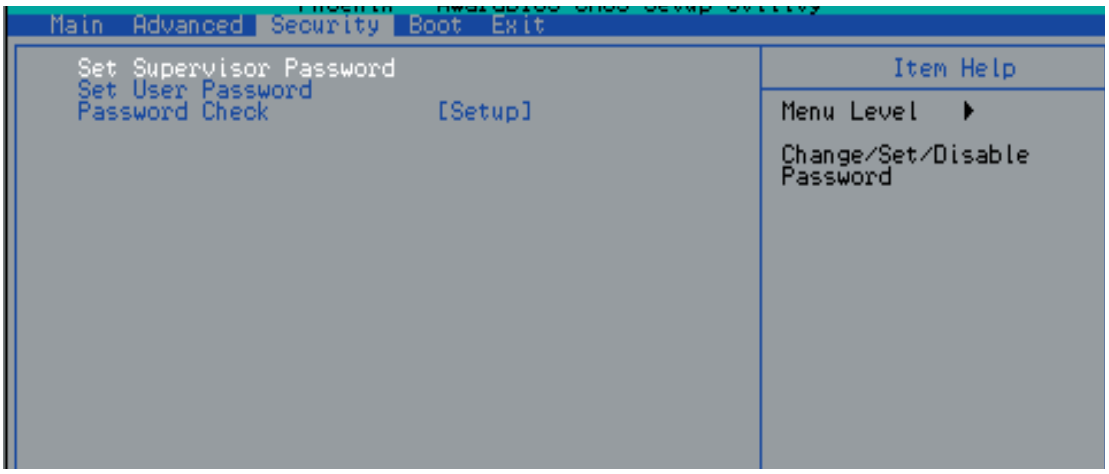
This setting allows you to select the device to be used for Console Redirection.

Agent Wait Time (Min)

This setting allows you to set the wait time for Console Redirection. The options are **1 (Min),** 2 (Min), 4 (Min), and 8 (Min).

7-5 Security

Choose Security from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:



Set Supervisor Password

When the item "Set Supervisor Password" is highlighted on the above screen, press the <Enter> key. When prompted, type the Supervisor Password in the dialogue box to set or to change the Supervisor Password.

Set User Password

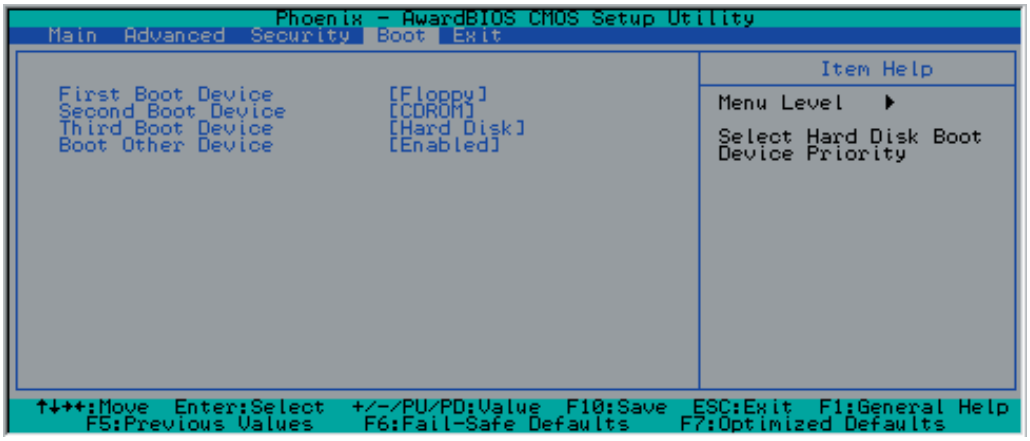
When the item "Set User Password" is highlighted on the above screen, press the <Enter> key. When prompted, type the User Password in the dialogue box to set or to change the User Password.

Password Check

This setting allows the user to determine if the password is required every time when the system boots up or if the password is required only when you enter the CMOS setup. The options are "System" and "**Setup**".

7-6 Boot

Choose Boot from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Security Boot Exit
Item Help
First Boot Device [Floppy]
Second Boot Device [CDROM]
Third Boot Device [Hard Disk]
Boot Other Device [Enabled]
Menu Level ▶
Select Hard Disk Boot Device Priority
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

The Award BIOS attempts to load the operating system from devices specified by the users in a user-specified sequence.

First Boot Device

This item allows the user to set the first boot-up device. The options are "**Floppy**", "LS120", "HDD", "CDROM", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

Second Boot Device

This item allows the user to set the second boot-up device. The options are "Floppy", "LS120", "HDD", "**CDROM**", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

Third Boot Device

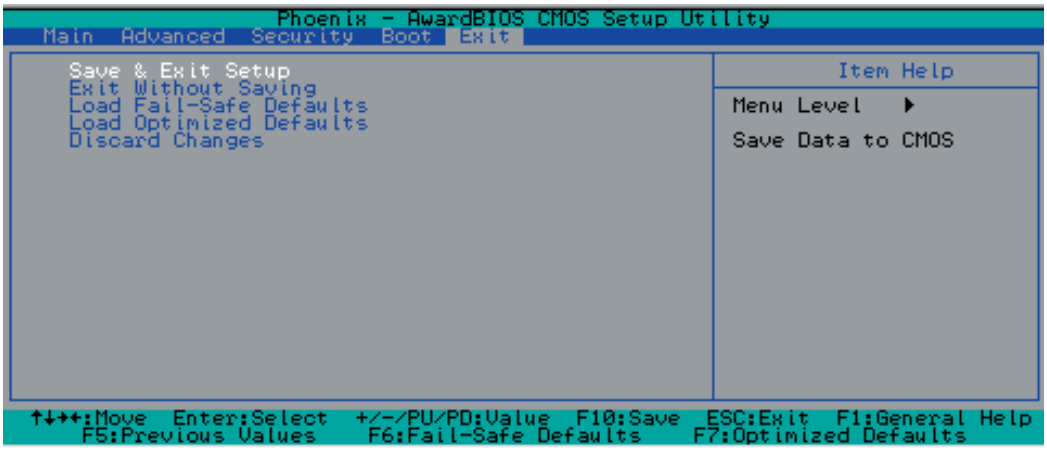
This item allows the user to set the third boot-up device. The options are "Floppy", "LS120", "**HDD**", "SCSI", "CDROM", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

Boot Other Device

If enabled, this option enables the BIOS to load the OS from another device rather than the ones that have been specified as the first, second and third boot up devices. The settings are "**Enabled**" and "Disabled".

7-7 Exit

Choose Exit from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Security Boot Exit
Save & Exit Setup
Exit Without Saving
Load Fail-Safe Defaults
Load Optimized Defaults
Discard Changes
Item Help
Menu Level ▶
Save Data to CMOS
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Save & Exit Setup

When the item "Save & Exit Setup" is highlighted, press <Enter> to save the changes you've made in the BIOS program (CMOS) and exit. Your system should, then, continue with the boot-up procedure.

Exit without Saving

When the item "Exit without Saving" is highlighted, press <Enter> to exit the Setup routine without saving any changes you may have made. Your system should then continue with the boot-up procedure.

Load Fail-Safe Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Load Optimized Defaults

Highlight this item and hit <Enter> to load the optimized settings for all items in the BIOS Setup. These settings provide you with optimal system performance.

Discard Changes

When the item "Discard Changes" is highlighted, press <Enter> to discard any changes you made to the BIOS settings and to stay in the BIOS Setup. Your system should then continue with the boot-up procedure.

Notes

Appendix A

BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Beeps	Error Messages
1 short beep	System Normal
1 long beep+2 short beeps	VGA Errors
1 long beep+9 short beeps	ROM Errors
Repetitive pattern of beep+pause	Memory errors
Overheat LED is On with beeping	Overheat

Notes

Appendix B:

BIOS POST Codes

This section lists the POST (Power On Self Testing) Codes for the Award BIOS.

POST (hex)	Definition
CFh	Test CMOS R/W functionality
C0h	Early chipset initialization - Disable shadow RAM - Disable L2 cache (socket 7 or below) - Program basic chipset registers
C1h	Detect memory - Auto detection of DRAM size, type and ECC - Auto detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
0h1	Expand the Xgroup codes located in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips 2. Enable keyboard interface
09h	Reserved
0Ah	1. Disable PS/2 mouse interface 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional) 3. Reset keyboard for Winbond 977 series Super I/O chips
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support
11h	Reserved

POST (hex)	Definition
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch
17h	Reserved
18h	Detect CPU information including brand, SMU type (Cyrix or Intel) and CPU level (586 or 686)
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_softHDLR.
1Ch	Reserved
1Dh	Initial EARLY_PMI_INIT switch
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization
22h	Reserved
23h	1. Check validity of RTC value, e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI and PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: - Enumerate PCI bus number - Assign memory and I/O resource - Search for a valid VGA device and VGA BIOS and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	1. Program CPU internal MTRR (P6 & PII) for 0-64K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed. 5. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed, etc.
2Eh	Reserved

POST (hex)	Definition
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2
41h	Reserved
42h	Reserved
43h	Test 8259 functionality
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMDK5 CPU.
4Ah	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed, etc.
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU. 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved

POST (hex)	Definition
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization - Assign CSN to every ISA PnP device
58h	Reserved
59h	Initialize the combined Trend anti-virus code
5Ah	Reserved
5Bh	Show message for entering AWDFLASH.EXE from FDD (optional feature)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch 2. Initialize Init_Onboard_AUDIO switch
5Eh	Reserved
5Fh	Reserved
60h	Ok to enter Setup utility; i.e. not until this POST stage can users enter the CMOS Setup utility
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup and Auto-configuration table
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware
70h	Reserved
71h	Reserved
72h	Reserved
73h	Enter AWDFLASH.EXE if: (optional feature) - AWDFLASH is found in floppy drive - Alt+F2 is pressed

POST (hex)	Definition
74h	Reserved
75h	Detect and install all IDE devices: HDD, LS120, ZIP, CD-ROM, etc.
76h	Reserved
77h	Detect serial ports and parallel ports
78h	Reserved
79h	Reserved
7Ah	Detect and install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. - If errors occur, report errors and wait for keys. - If no errors occur or F1 key is pressed to continue: - Clear EPA or customization logo
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend anti-virus code

POST (hex)	Definition
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization 4. Power management final initialization 5. Clear screen and display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight savings 2. Update keyboard LED and typematic rate
96h	1. Build MP table 2. Build and update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table
FFh	Boot attempt (INT 19h)

Appendix C

Software Installation

If you do not wish to configure SATA RAID, proceed directly to Section C-3.

After all the hardware has been installed, you must first configure Intel's ICH6R SATA RAID before you install the Operating System and other software drivers. The necessary drivers and user's guides are all included on the Supermicro CDs that came packaged with the system.

C-1 Configuring Intel's ICH6R SATA RAID Function

To configure SATA RAID functions, you must first configure the desired RAID level with the ICH6R SATA RAID Utility program before you install the operating system and other software drivers. The necessary drivers are all included on the Supermicro CDs that came packaged with your system.
Note: the current ICH6R SATA RAID Utility version can only support Windows XP/2000/2003 and Linux/SuSE Operating Systems.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link that supports SATA transfer rates of up to 150MBps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis than PATA. In addition, the cables used in PATA can only extend to 40 cm, while SATA cables can extend up to one meter. Overall, SATA provides better functionality than PATA.

Intel's ICH6R Serial RAID

Located in the South Bridge of the E7221 Copper River Chipset, the I/O Controller Hub (ICH6R) provides the I/O subsystem with access to the rest of the system. It supports a one-channel Ultra ATA/100 Bus Master IDE controller (PATA) and a Serial ATA (SATA) Host Controller, which supports up to four Serial ATA ports and up to two sets of RAID drives. RAID 0 (Striping), RAID 1 (Mirroring) and RAID 10 (Striping+Mirroring) are supported. The ICH6R supports both PATA and SATA device configurations.

ATA Operating Modes

You can select from the following two modes: Legacy mode and Native mode.

SATA Operating Modes

You can select from the following modes: Auto, Combined, Enhanced, and SATA Only Mode. The number of devices supported by these modes are listed below:

*SATA Only: The maximum of 4 devices are supported (4 SATA)
*Auto Mode: The maximum of 6 devices supported (4 SATA + 2 IDE)
*Enhanced Mode: The maximum of 6 devices supported (4 SATA + 2 IDE)
*Combined Mode: The maximum of 4 devices supported (2 SATA + 2 IDE)

Configuring BIOS Settings (Native Mode)

1. Press the **Del** key during system bootup to enter the BIOS Setup Utility.

Note: If it is the first time to power on the system, we recommend that you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Menu. Once in the "Exit" Menu, scroll down the menu to select the item "Load Optimized Default Settings" and press the **Enter** key. Select **OK** to confirm the selection. Press the **Enter** key to load the default settings to the BIOS.

3. Use the arrow keys to select the "Advanced" Menu in BIOS.

4. Scroll down to the item "Advanced Chipset Control" and press the <Enter> key to select this option.

5. Select the item "On-Chip Serial ATA", and press the <Enter> key. When the sub-menu appears, select the item "Enhanced Mode".

6. Scroll up to the item "SATA Mode" and press the <Enter> key to select this option. When the sub-menu appears, select the item "RAID".

7. Tap "Esc" and scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

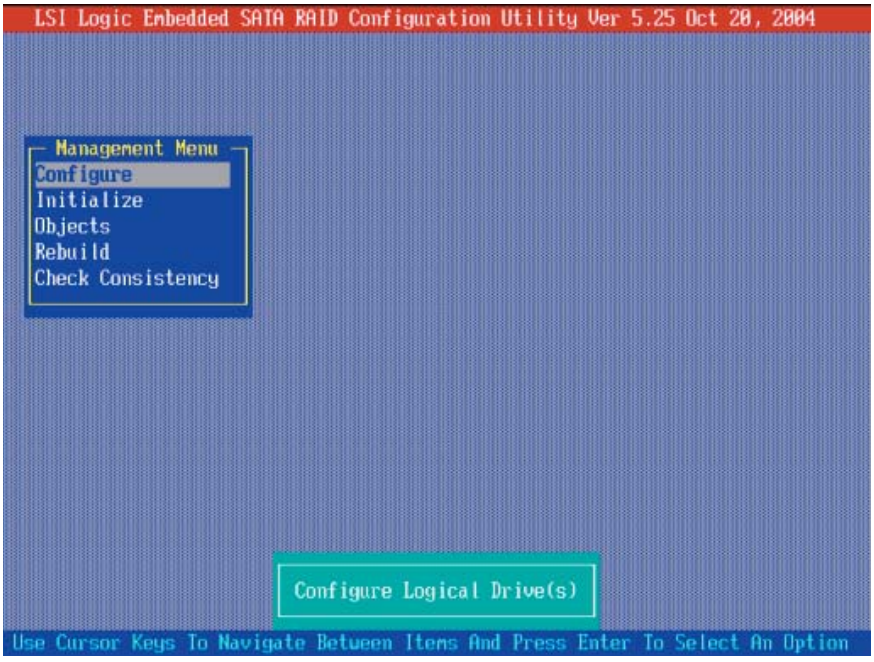
8. Once you've exited the BIOS Utility, the system will re-boot.

Using the LSI ICH6R SATA RAID Utility Driver

Accessing the LSI SATA RAID Utility

After the system exits from the BIOS Setup Utility, it will automatically reboot. To run the LSI Logic Embedded SATA RAID Setup Utility, press the <CTRL> and the <M> keys simultaneously during system bootup as shown in the screen below:

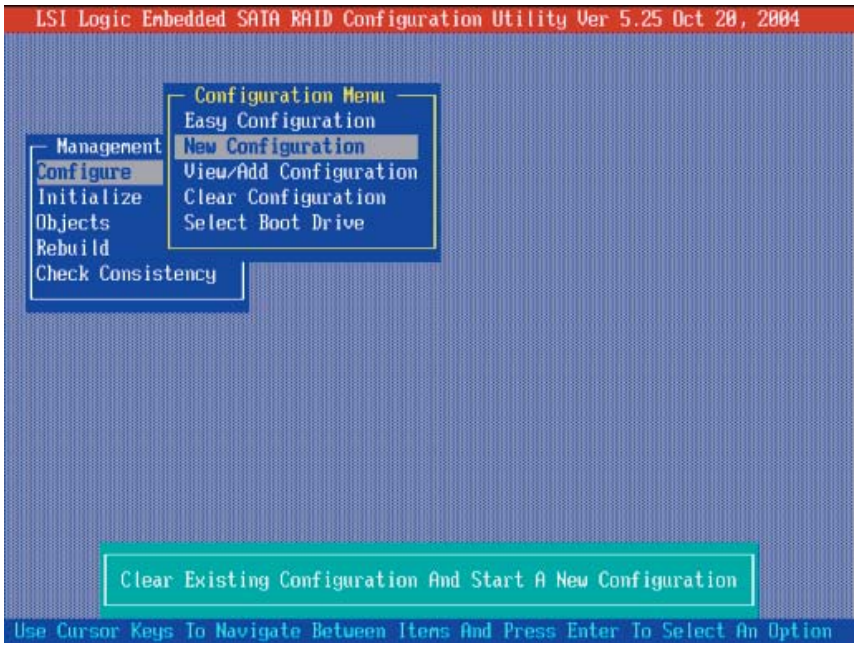
Once you've entered the LSI SATA RAID Setup Utility, the main menu displays as shown below:


LSI Logic Embedded SATA RAID Configuration Utility Ver 5.25 Oct 20, 2004
Management Menu
Configure
Initialize
Objects
Rebuild
Check Consistency
Configure Logical Drive(s)
Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option

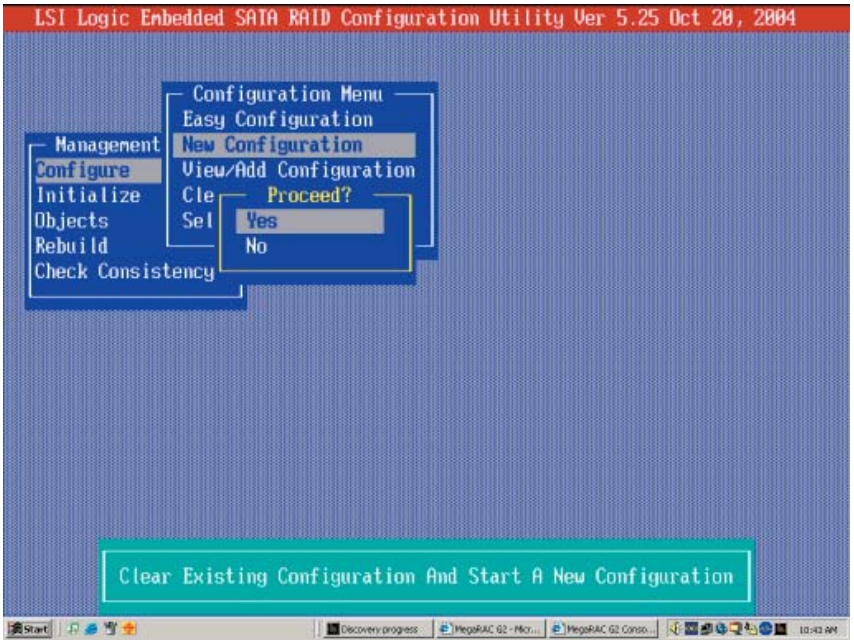
Note: Please refer to the LSI User's Guide (included in the CD) to install the LSI SATA RAID Controller driver.

Creating New A SATA RAID:

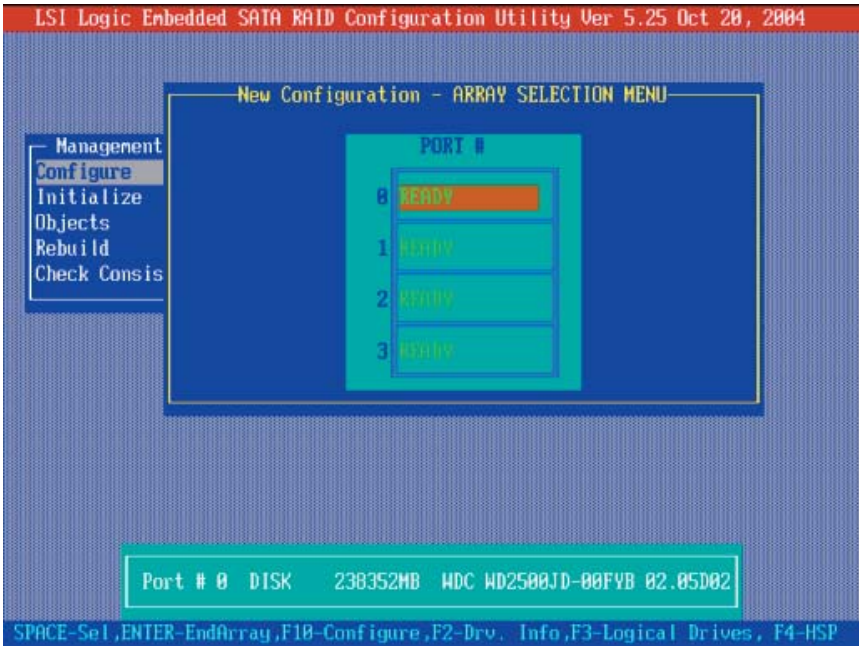
1. From the Main Menu (shown on the previous page), select "Configure" and press the <Enter> key. The following screen displays:



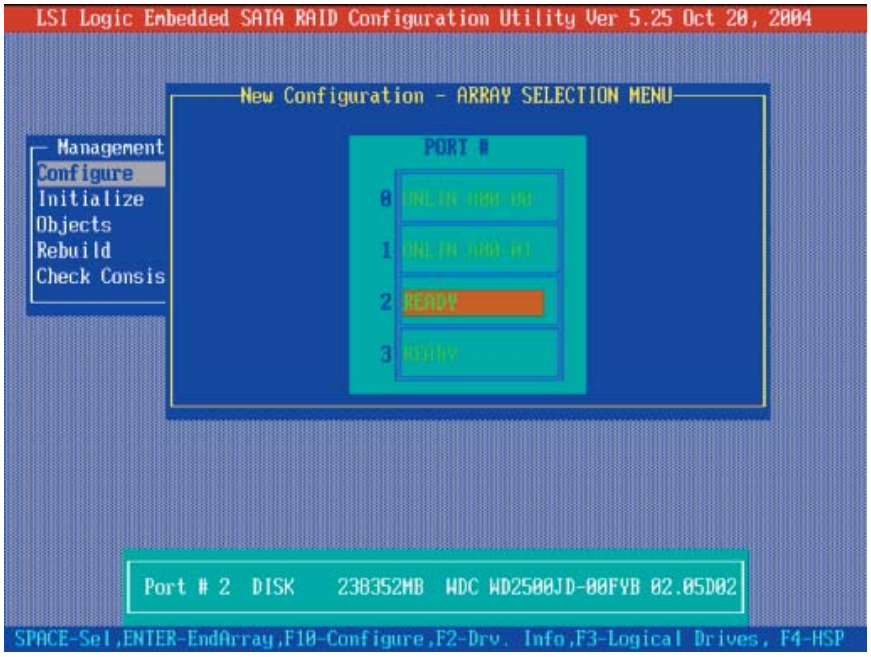
2. From the Configuration submenu, select "New Configuration" and press the <Enter> key to activate the following submenu:



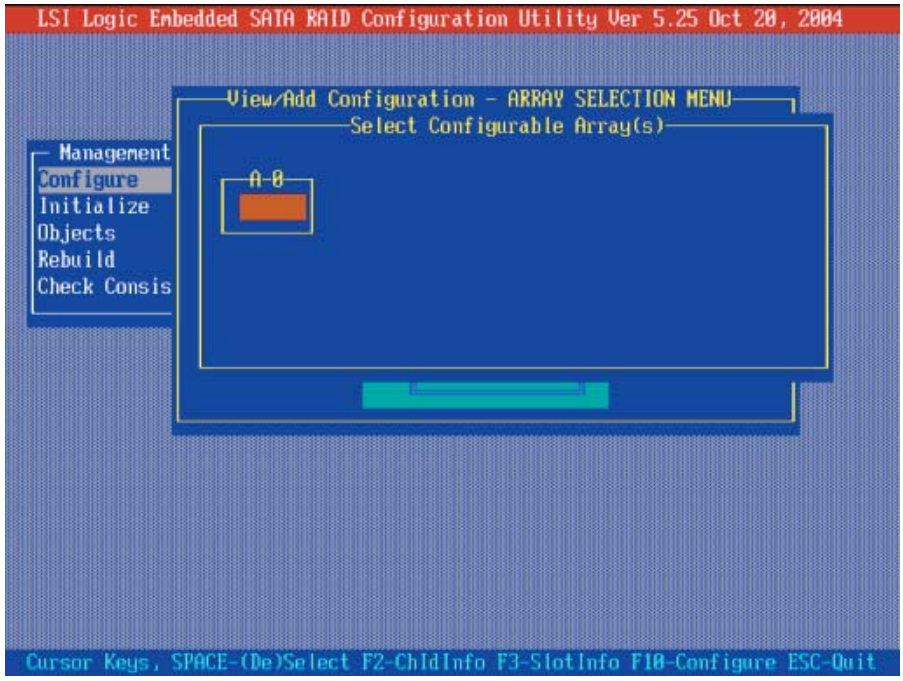
3. When the submenu appears, highlight "Yes" and press the <Enter> key at the prompt (as shown above) to proceed with the new RAID configuration. The following screen displays:



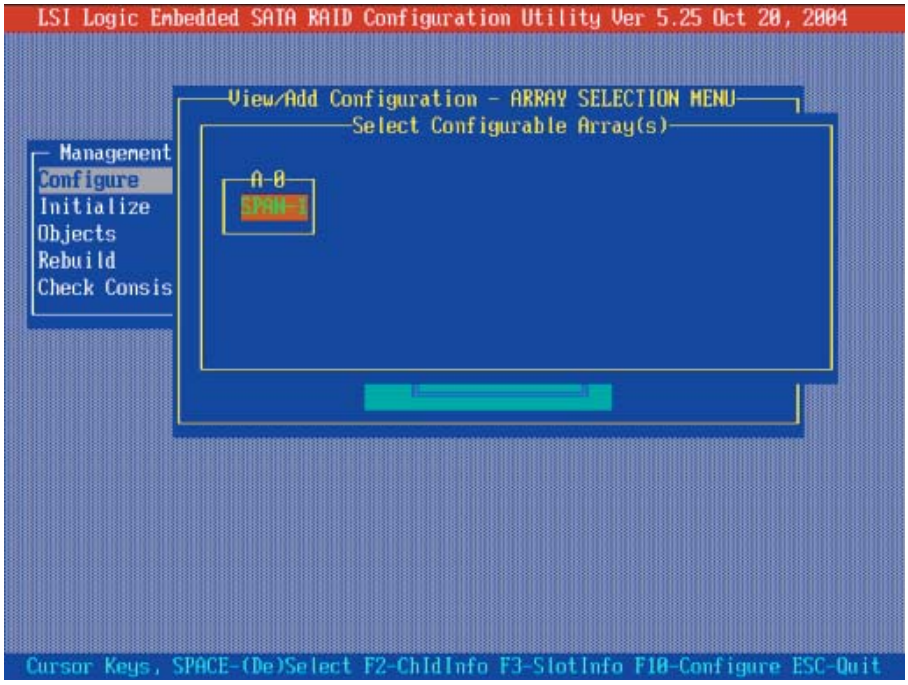
4. When the screen shown above appears, press the space bar on your keyboard to select the physical drives that you wish to configure as RAID drives. The text of the selected drives will change from "Ready" to "Online" as shown below:



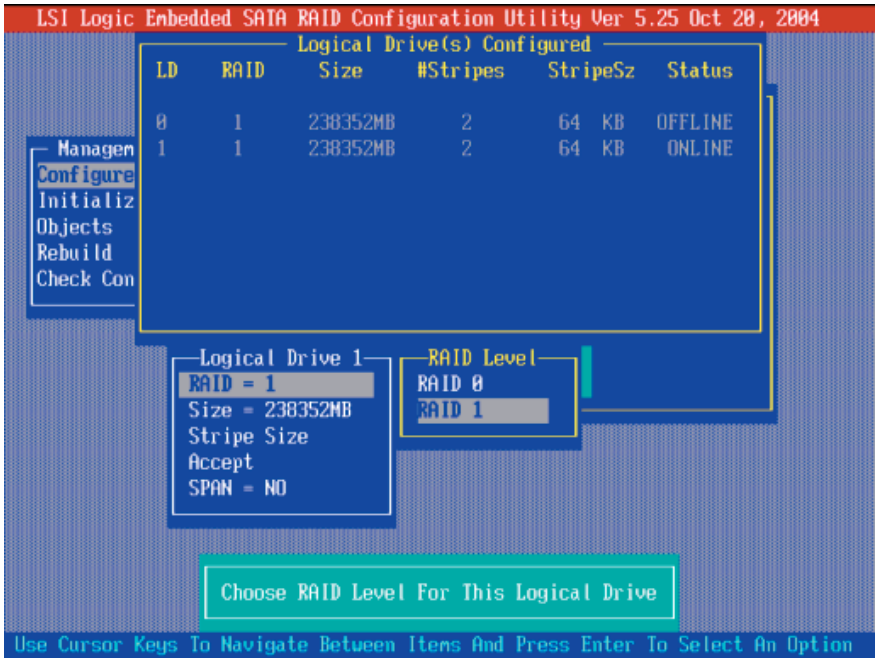
5. When the screen shown above displays, press <F10> to associate the selected physical drive with the current array. Once you've finished creating the current array, press <Enter>. The following screen appears:



6. In the above display, press the space bar to select the array.



7. When the pop-up submenu, indicating "SPAN-1" appears as shown above, use the space bar to configure the selected drive and press <F10>. The following screen appears:



8. When the screen shown above appears, highlight RAID 1 to select it (this is the default setting), or press <Enter> for other RAID options.

9. After completing the RAID level selection, use the arrow keys to highlight "Accept", and press <Enter>.

10. Once you've created a new RAID, save the configuration and proceed with disk drive initialization.

Initializing Disk Drives

If an installed disk does not appear in the disk selection list for creating a new array or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

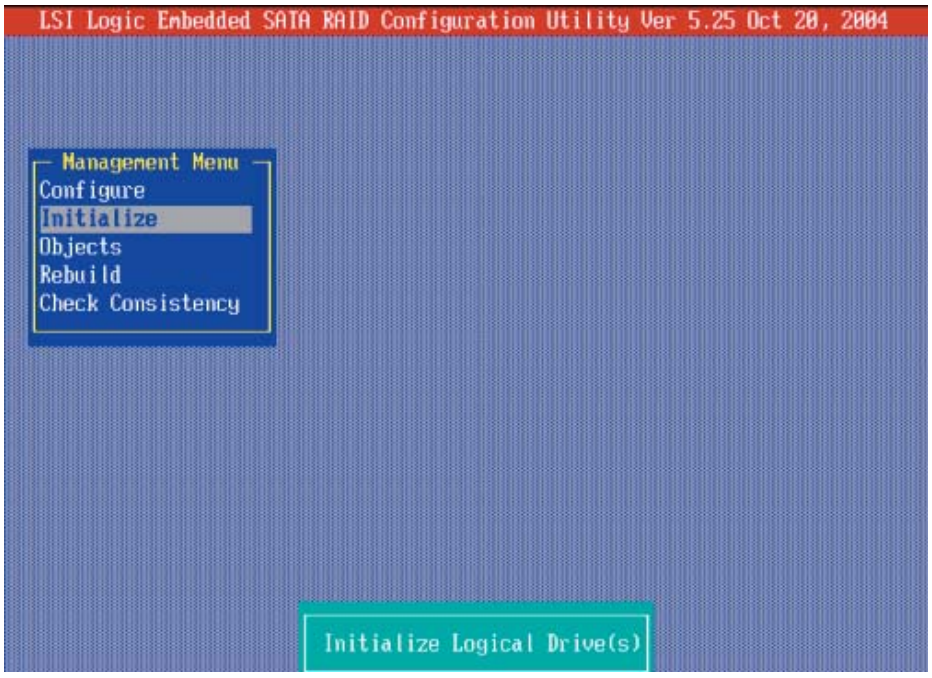
Caution: Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

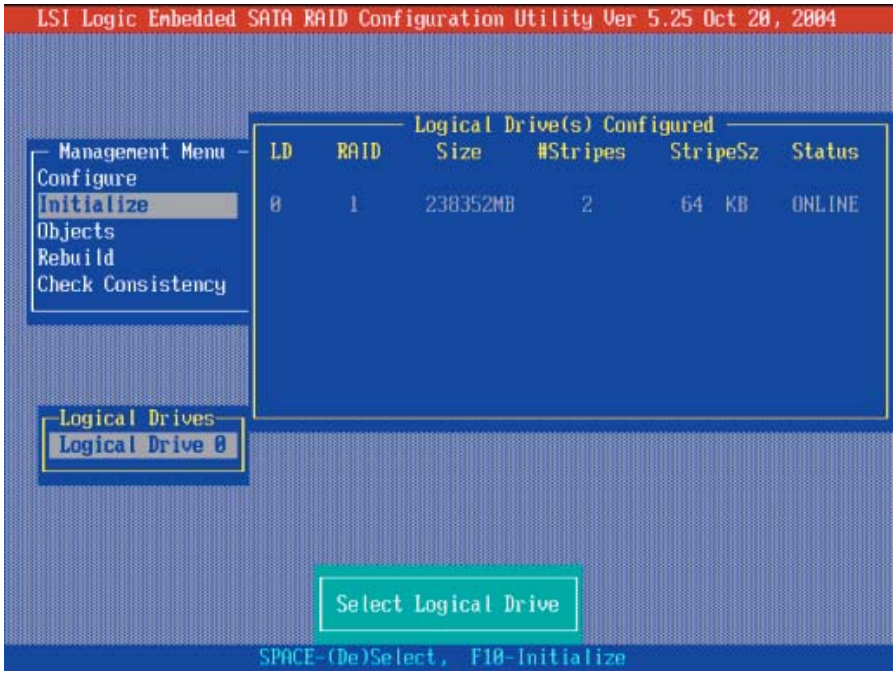
Do not initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to *Viewing Array Properties.*

1. Use the arrow keys to select "Initialize" from the LSI SATA RAID main menu (shown below), and press the <Enter> key.

2. Select "Logical Drive" from the pop-up submenu and press <Enter>.

3. Use the space bar on your keyboard to select the Logical Drive you wish to initialize and press <Enter>.





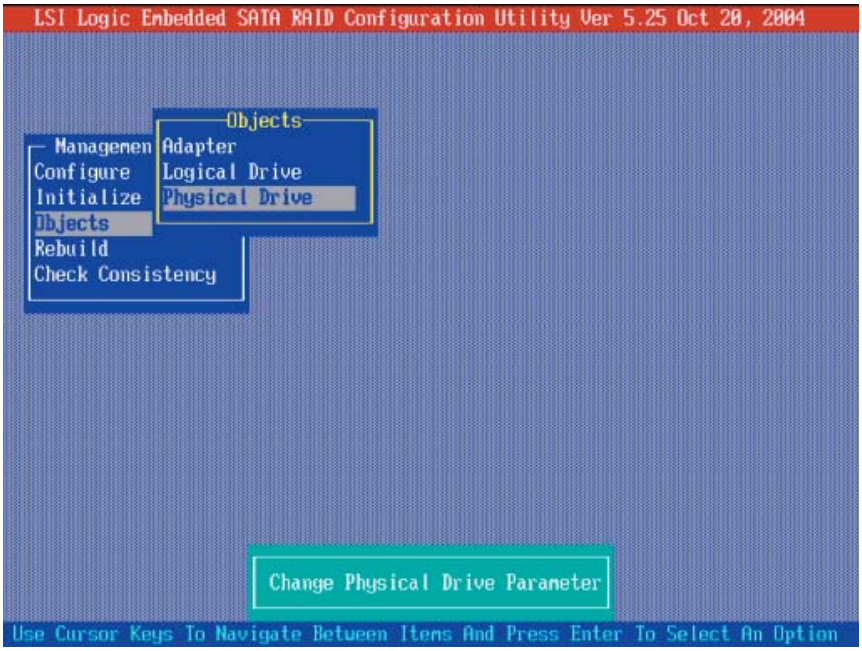
4. After selecting the Logical Drive, press <F10> to initialize the selected disk drive.

5. When prompted for confirmation, use the arrow keys to select "Yes" and press <Enter>. A new screen will confirm the initialization of the selected disk drive.

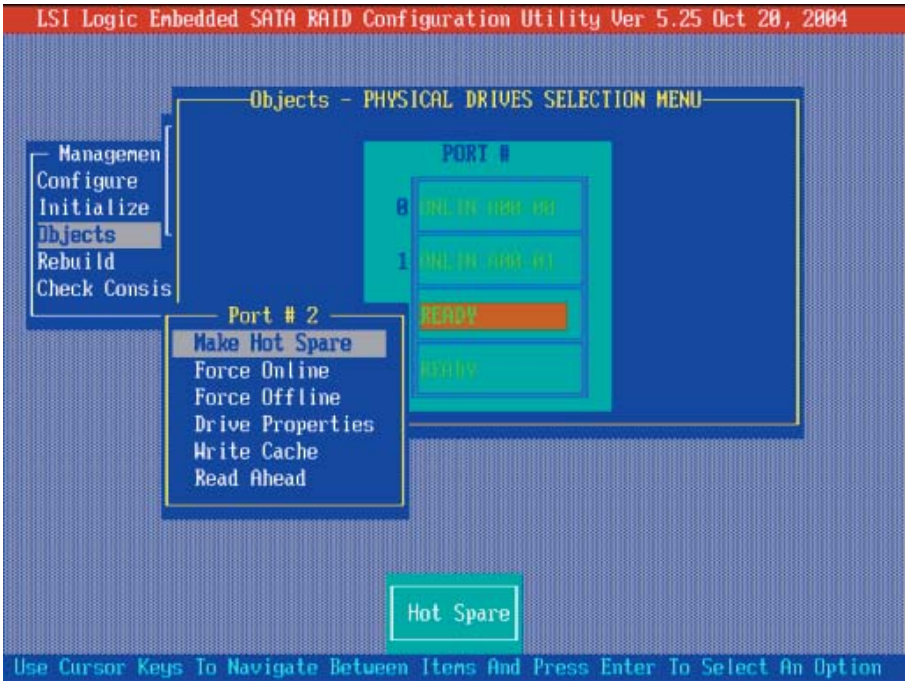
Creating Hot Spare Drives

1. Use the arrow keys to select "Objects" from the LSI SATA RAID main menu and press <Enter>.

2. Select "Physical Drive" and press <Enter>. The following menu displays.



3. Use the space bar to select the physical drive you wish to configure as a Hot Spare drive from the pop-up submenu and press <Enter>. The status of the disk drive selected will be changed from "Ready" to "HOTSP".



Note: For detailed information regarding LSI's SATA RAID configuration, please refer to the LSI User's Manual included in the CD that came with the system. You can also visit our web site at www. supermicro.com for the LSI's User's Manual.

C-2 Installing WindowsXP/2000/2003 for RAID Systems

Note: It is strongly recommended that you initialize the disk drives before installing the OS. Refer to the previous section for disk drive initialization.)

1. Insert Supermicro's bootable CD that came with the system into the CD-ROM drive during the system reboot. The "Super Micro Driver Diskette Maker" screen displays.

2. Choose "Marvell Hercules II SATA Driver by 3rd Party (LSI)" from the items listed and press <Enter>.

3. From the next screen displayed, choose the OS driver you want to install and press <Enter>.

4. Insert a formatted diskette into drive A: and press <Enter> as prompted.

5. Exit the program after the process has completed. Then, reboot the system.

6. Insert Microsoft Windows OS Setup CD in the CD-ROM drive. The system will boot up from the CD.

7. Press the <F6> key when the message "Press F6 if you need to install a third party SCSI or RAID driver" is displayed.

8. When the Windows OS Setup screen appears, press <S> to specify additional device(s).

9. Insert the driver diskette labelled "LSI Embedded Serial ATA RAID Controller Driver" into your floppy drive and press the <Enter> key.

10. Choose "LSI Embedded Host Serial ATA RAID Controller" from the list indicated in the Windows OS Setup Screen and press the <Enter> key.

11. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

12. From the Windows OS Setup screen, press the <Enter> key. The OS setup routine will automatically load all device files and continue the Windows OS installation.

13. After the Windows OS installation has completed, the system will automatically reboot.

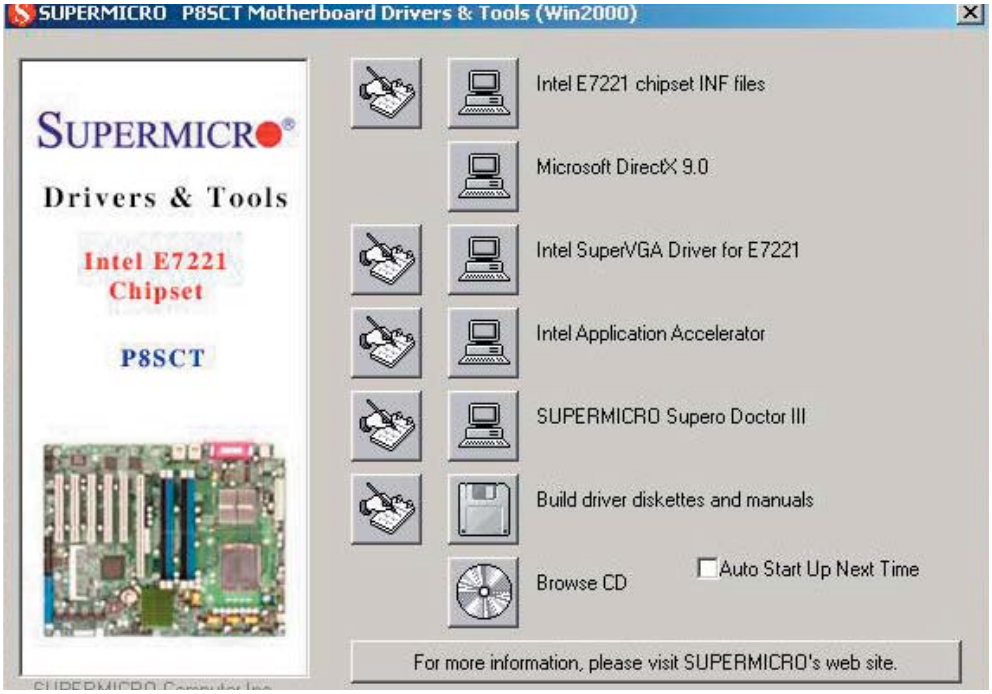
Note: To install operating systems other than a Windows OS, or to install other software, please refer to the LSI User's manual included in the CD that came with the system. You can also visit our web site at www. supermicro.com to download the manual.

C-3 Installing Other Software Programs and Drivers

Installing Other Drivers

After you've installed the Windows Operating System, a screen as shown in Figure C-1 displays. You are now ready to install additional software programs and drivers. To install these software programs and drivers, click the icons to the right of these items.

Figure C-1. Driver/Tool Installation Display Screen



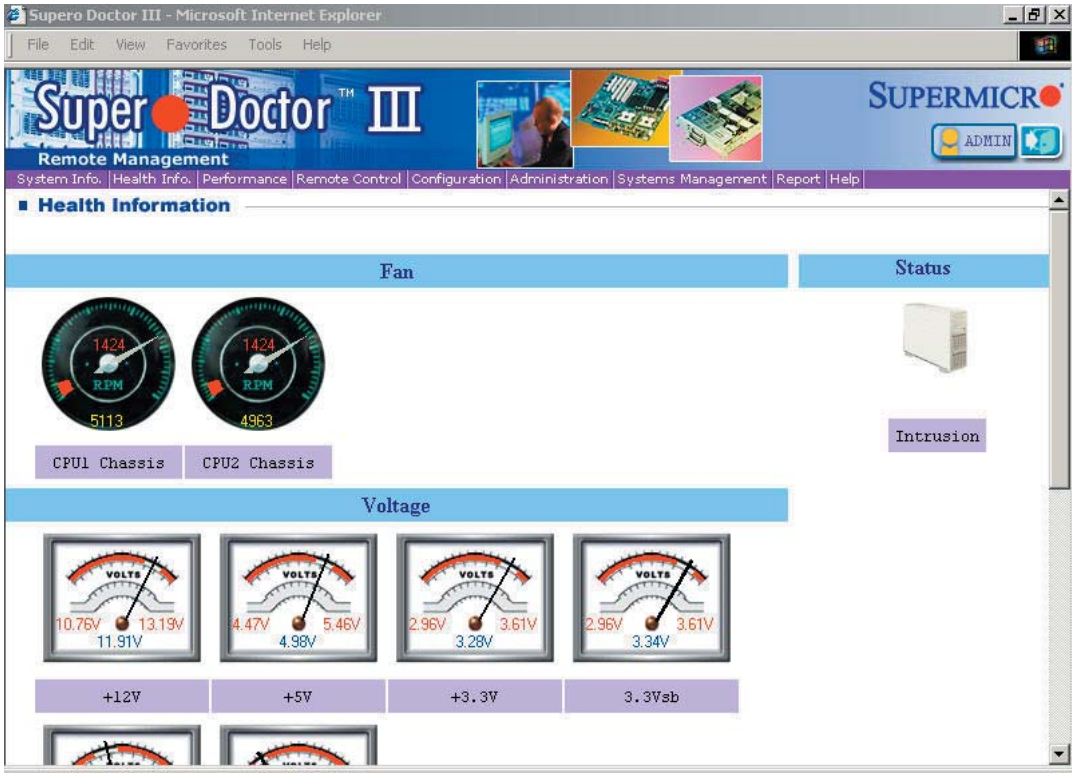
Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** You should install everything here except for the SUPER Doctor utility, which is optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Note: Please refer to the LSI User's Guide (included in the CD) for installing the LSI SATA RAID Controller Driver. You can also download a copy of the guide from our web site.

Supero Doctor III

The Supero Doctor III program is a web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

C-2. Supero Doctor III: Health Information



C-3. Supero Doctor III: Remote Control

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: SD III Software Revision 1.0 can be downloaded from our web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend Supero Doctor II.

Appendix D

System Specifications

Processors
Single Intel® Pentium® 4 LGA775 processor at an 800 MHz front side bus speed or a single Intel® Celeron® processor at a 533 MHz FSB (hyper-threading enabled)

Chipset
Intel E7221

BIOS
Award BIOS in 8 Mb Flash EEPROM

Memory Capacity
Four (4) DIMM slots to support a maximum up to 4 GB of unbuffered ECC *or* non-ECC DDR2-533/400 SDRAM modules

Note: all memory modules should be the same size, speed and type

Serial ATA Controller
Intel ICH6R on-chip controller for 4-port Serial ATA (RAID 0,1 10 and JBOD supported)

Serial ATA Drive Bays
Four (4) hot-swap drive bays to house four (4) standard Serial ATA drives

Peripheral Bays
Four (4) hot-swap SATA drive bays
One (1) slim CD-ROM drive

PCI Expansion Slots
One (1) 64-bit 133 MHz (3.3V) PCI-X slot (bundled with a riser card)

Motherboard
Model: P8SCT (ATX Form Factor)
Dimensions: 12 x 9.5 in (305 x 241 mm)

Chassis

Model: SC813MT-300C (1U Rackmount)

Dimensions: (WxHxD) 17.2 x 1.7 x 19.85 in. (437 x 43 x 504 mm)

Note: please visit our web site for information on supported operating systems

Weight

Gross Weight: 38 lbs. (17.3 kg.)

System Cooling

Three (3) 4-cm high performance fans

System Input Requirements

AC Input Voltage: 100-240V AC auto-range

Rated Input Current: 5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 300W (Model# SP302-1S, Part# PWS-0054)

Rated Output Voltages: +3.3V (15A), +5V (25A), +12V1 (15A), +12V2 (15A), 12Vtotal (20A), -12V (1A), +5Vsb (2A)

BTU Rating

1470 BTUs/hr (for rated output power of 300W)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions:
FCC Class B, EN 55022 Class B, EN 61000-3-2/-3-3, CISPR 22 Class B

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4,
EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant
UL Listed (USA)
CUL Listed (Canada)
TUV Certified (Germany)
CE Marking (Europe)

Notes